REPORT RESUMES

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TELEVISED INSTRUCTION IN UNIVERSITY RESIDENCE HALLS WITH TRAINED UNDERGRADUATES AS DISCUSSION LEADERS.
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ILLINOIS UNIV., URBANA
REPORT NUMBER NDEA-VIIA-457 PUB DATE AUG 64
GRANT OEG-7-23-1020-107
EDRS PRICE MF-$0.27 HC-$6.76 169P.

DESCRIPTORS- *INSTRUCTIONAL TELEVISION, *COLLEGES, *SOCIAL SCIENCES, *TELEVISED INSTRUCTION, PROGRAM EVALUATION, STUDENT PARTICIPATION, *DISCUSSION GROUPS, URBANA, ILLINOIS

THE PURPOSE OF THE STUDY WAS AN EXAMINATION OF THE INTERACTION OF THREE INNOVATIONS IN HIGHER EDUCATION--(1) TELEVISED INSTRUCTION, (2) INCREASED STUDENT PARTICIPATION IN THE LEARNING-TEACHING PROCESS, AND (3) INCREASED ATTENTION TO THE EDUCATIONAL ENVIRONMENT OF RESIDENCE HALLS. DURING EACH SEMESTER OF A 3-YEAR PERIOD, THE LECTURE-DEMONSTRATION PART OF A LOWER-DIVISION, GENERAL SOCIAL SCIENCE COURSE WAS TELEVISED ON AN OPEN CIRCUIT. STUDENTS WERE ENCOURAGED TO ATTEND THE TELECASTS EITHER IN CLASSROOMS OR IN RESIDENCES. NINE OF THE LECTURES WERE FOLLOWED BY STUDENT DISCUSSION LED BY UNDERGRADUATES WHO HAD PREVIOUSLY PARTICIPATED IN A TRAINING PROGRAM. DATA WERE COLLECTED ON STUDENT APTITUDE, ACHIEVEMENT, OPINION ON RELEVANT QUESTIONS, ATTENDANCE, AND A VARIETY OF OTHER PERTINENT FACTORS. WHEN GIVEN THE OPPORTUNITY TO VIEW INSTRUCTIONAL TELEVISION PROGRAMS IN THEIR RESIDENCES, A LARGE PROPORTION WILL DO SO. THE PLACE OF VIEWING SEEMS TO HAVE NO PRACTICAL EFFECT UPON STUDENT ACHIEVEMENT. THERE APPEARED TO BE NO MEASURABLE DIFFERENCE IN ACADEMIC MOTIVATION BETWEEN THOSE WHO VIEW IN CLASSROOMS AND THOSE WHO VIEW IN RESIDENCES. THE OPINION OF LEADERS THEMSELVES AS GATHERED BY QUESTIONNAIRE, INTERVIEW, AND OBSERVATION INDICATED THAT THEIR PARTICIPATION AND TRAINING CONTRIBUTED TO THEIR KNOWLEDGE OF AN INTEREST IN THE COURSE, TO THEIR ABILITY AS STUDENT LEADERS AND TO THEIR UNDERSTANDING OF THE ROLE OF THE TEACHER. (HB)

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TELEVISED INSTRUCTION IN UNIVERSITY RESIDENCE HALLS WITH TRAINED UNDERGRADUATES AS DISCUSSION LEADERS

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August 1964

Title VII Project Number 457
National Defense Education Act of 1958
Grant No. 7-23-1020-107

The Research Reported Herein
Was Supported by a Grant from
The U. S. Department of Health, Education, and
Welfare Office of Education

UNIVERSITY OF ILLINOIS · URBANA

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ACKNOWLEDGEMENTS

While any deficiencies in this study are the responsibility of the authors, whatever merit it may have owes much to the co-operation and effort of many individuals who were associated with it.

The student discussion leaders, who were too numerous to mention here by name, contributed their time and effort with loyalty and enthusiasm. We hope they believe they received as much as they gave. Similarly, our graduate assistants contributed significantly. We should like particularly to mention James Hennes, who was especially helpful in collecting the data and processing it through the computer, and Efrosini Johns, who was meticulous in keeping records.

There were others whose assistance and co-operation must go unnamed, because in many instances they were personally unknown to the project staff. They included the house officers of fraternities, sororities, and independent housing units who decided to utilize the television viewing facilities of their houses for the reception of the course lectures. Several of these houses offered the hospitality of these facilities to students who were not house members. The staffs of many university residence halls, in co-ordination with the Offices of the Dean of Men and Dean of Women, also made an extra effort to have facilities available for lecture reception and to welcome student discussion leaders to conduct short discussions. These arrangements required planning and preparation by staff already burdened with both routine and special demands for their facilities.

Particular mention should be made of the assistance given by Miriam A. Shelden, Dean of Women, Eunice M. Dowse, Associate Dean for Residence Hall Planning and Staff Training, and Carl W. Knox, Dean of Men.

Susanne Ritchey and Danita Jensen typed and checked the report, and made it ready for duplication. Joanne McIntyre corrected the final draft.

The extensive analysis performed with the 7094-1401 computer system was partially supported by a grant from the National Science Foundation NSFGP - 700.

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TABLE OF CONTENTS

Page
ACKNOWLEDGEMENTS iii
LIST OF TABLES vii
ABSTRACT xi
I. INTRODUCTION 1
II. METHODS AND PROCEDURES: THE EXPERIMENTAL TREATMENT AND THE INSTRUCTIONAL SITUATION 7
  A. Staff 7
  B. The Demographic Context 8
  C. The Course 9
  D. Television Production 10
    1. Physical Facilities - Production 10
    2. Program Distribution 11
  E. Discussions Led by Undergraduates 12
    1. Selection of Leaders 12
      a. Upper Classmen 12
      b. Peer-Leaders 12
    2. The Training Program 13
    3. The Discussion Sections 14
III. THE TRAINING PROGRAM FOR UNDERGRADUATE DISCUSSION LEADERS 15
  A. Operation of the Training Program---Staff and Responsibilities 15
  B. The Content of the Training Program 20
  C. The Response of the Peer-Leaders to the Training Program and Their Instructional Effectiveness 22
  D. Factors Influencing the Quality of Student-Led Discussion 28
  E. Peer-Leading and Student Career 30
  F. The Significance of Videotaped Lectures in the Training Program 31
  G. Summary 33
IV. COLLECTION AND ANALYSIS OF DATA 35
  A. Linear Models 39
  B. Chi Square 45
V. RESULTS 49
  A. Characteristics of the Population 49
  B. Place and Time of Viewing 58
  C. Student Achievement 71
  D. Effects Associated With Student Leaders (Peers) and Non-Leaders 78
  E. Attitudes Toward Television and Other Aspects of the Course 92

Page
F. Attendance and Its Relationship to Other Factors 105
G. The Retrospective Study 107

VI. DISCUSSION AND SUMMARY OF RESULTS 115
A. Characteristics of the Population 115
B. Place and Time of Viewing 115
C. Student Achievement 117
D. Effects Associated With Student Leaders and Non-Leaders 117
E. Attitudes Toward Television and Other Aspects of the Course 119
F. Attendance and its Relationship to Other Factors 120

VII. CONCLUSIONS 123

APPENDIX I: THE EFFECTS OF GROUP STRUCTURE AND STUDENT TRAITS ON CLASS DISCUSSION OF TELEVISION LECTURES 125

APPENDIX II: RELATIONSHIPS AMONG PEER-LEADER BEHAVIOR, GROUP CHARACTERISTICS, AND LEARNING DURING GROUP DISCUSSION FOLLOWING SHORT TELEVISION LECTURES 141

APPENDIX III: A SOCIOMETRIC COMPARISON OF THE GROUP RESPONSE TO THE INSTRUCTIONAL SITUATION OF UNDERGRADUATE DISCUSSION LEADERS AND "HONORS" STUDENTS 149

APPENDIX IV: THE EFFECTIVENESS OF TRAINED UNDERGRADUATES AS LEADERS OF REGULARLY SCHEDULED DISCUSSION SECTIONS 153

LIST OF TABLES

Table No.		Page
1	Distribution of All University Students According to Place of Local Residence	8
2	Distribution of Experimental Students According to Sex, Year in School and Place of Local Residence	9
3	Source of Discussion Leaders	13
4	Number and Place of Discussion Sessions	14
5 a	Levels of Duties of Staff in Training Program for Undergraduate Discussion Leaders	16
5 b	Typical Semester Schedule of Training Program for Undergraduate Discussion Leaders	18
6	Number of Student Volunteers for Undergraduate Discussion Leaders Seven Semesters of Program	19
7 a	Attitudes of Peer-Leaders and Their Estimates of Attitudes of Their Discussion Groups Toward Course Lectures and Regular Discussion	25
7 b	Summary of Interviews With Thirty-Three Peer-Leaders on Aspects of the Short Discussions of Televised Lectures	26
8	Actual Course Enrollment and Usable Experimental Population	49
9	Per Cent Enrollment By College for Experimental Subjects and for All University Freshmen and Sophomores	50
10	Scores of Experimental Subjects and of All Entering University Students on the School and College Ability Test (SCAT)	50
11	Grade Point Average of Experimental Subjects and All Freshmen Students in 1962	51
12	Sex and Place of Residence	52
13	Sex and Grade Point Average for Courses Last Semester	53
14	Sex and Expectation of Amount of Higher Education	54
15	Sex and Religious Preference	55
16	Sex and Availability of TV in Residences	56
17	Class and Place of Residence	57
18	Class and Grade Point Average for Last Semester	58
19	Place of Attendance at Fifty-Minute Lecture (In Per Cent)	59
20	Per Cent of Students Viewing in Different Places at Different Hours	59
21	Per Cent of Students Viewing at Different Hours	60
22	Sex and Place of Viewing	61
23	Local Residence and Place of Viewing	62
24	Class and Place of Viewing	63

Table No.		Page
25	Place of Viewing and Expectations Regarding Level of Education to be Attained	64
26	Place of Viewing and Expectations Regarding Level of Education to be Attained (With Sex and Residence Held Constant)	65
27	Previous Experience With Instructional Television and Place of Viewing	66
28	Place of Viewing and Frequency of Changing Time or Place of Viewing	67
29	Place of Viewing and Perceived Attitudes of Instructors	68
30	Place of Viewing and Received Grade Point Averages	69
31	Other Significant Interactions With Place of Viewing	70
32	Other Non-Significant Interactions With Place of Viewing	70
33	The Achievement Tests	72
34	Effect of Place of Viewing on Achievement	74
35	Relationship of Place of Viewing to Academic Aptitude as Measured by SCAT	75
36	Relationship of Place of Viewing to Previous Semester's Grade Point Average	76
37	Relationship of Place of Viewing to Semester Hours Carried	76
38	Relationship of Place of Viewing to Amount of Studying	77
39	Comparison of Leaders and Non-Leaders on Various Measures of Academic Aptitude	78
40	Analysis of Covariance of Leader vs. Non-Leader Achievement Scores	79
41	Analysis of Variance and Covariance of Leaders and Non-Leaders on Various Measures of Academic Motivation	80
42	Residence of Leaders and Non-Leaders	81
43	Sex of Leaders and Non-Leaders	82
44	School Class of Leaders and Non-Leaders	83
45	Availability of TV Receivers to Leaders and Non-Leaders	84
46	Highest Grade Expected to be Completed by Leaders and Non-Leaders	85
46 a	Expectation of Going to Graduate School by Leaders and Non-Leaders	86
47	Attitudes of Instructors as Perceived by Leaders and Non-Leaders	87
48	Attitudes of Other Students as Perceived by Leaders and Non-Leaders	88
49	Effect of University of Leaders' and Non-Leaders' Capacity to Take Care of Themselves Physically and Emotionally	89
50	Effect of University on Leaders' and Non-Leaders' Feeling of Loyalty to the University	90

Table No. Page
51 Experience With the University of Leaders and Non-Leaders 91
52 Preference for Conventional Instruction or Instruction by Television (First Semester) 92
53 The Relationship of Preference for Television to Measures of Achievement and Aptitude 95
54 Place of Viewing as Related to Preference for TV or Conventional Large Group Instruction 96
55 Relationship of Previous Experience With Television in This Course to Preference for Television or Conventional Large Group Instruction 97
56 Leader's and Non-Leader's Preference for Television or Conventional Large Group Instruction in 1962-63 98
57 Student Opinions About the Course Which Yielded Significant Interactions 99
58 Student Opinions About the Course Which Did Not Yield Significant Interactions 101
58 a Matrix of Interactions of Students' Opinions About the Course (Summary of Tables 57 and 58) 104
59 Attendance at Television Lectures and Student-Led Discussion Sections in Sociology 105 and Two Other Televised Courses 105
60 Amount of Attendance at TV Lectures as Related to Achievement and Ratings of the Course and of Television 106
61 Responses to the Retrospective Questionnaire 107
62 Percentage of Students Favoring Continuation or Discontinuation of the Student-Led Discussions by Year 112
63 Mean Rating by Students of the Contribution of the Student-Led *Discussions to Learning* *113*
64 Mean Rating of Students of the Contribution of the Student-Led Discussions to Interest in the Course 113

APPENDIX I

1 Relationships Between the Structural Variables 129
2 Relationships Between the Student Traits 135
3 Multiple Correlations 135
4 Correlation Table 136

APPENDIX II

1 Pearson Product Moment Coefficients of Correlation Obtained Among Rates of Participation, Leader and Participant Behavior, and Learning 148

APPENDIX III

1 Comparison of Sociometric Scores of Peer-Leaders and James Scholars 150

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Abstract

TELEVISED INSTRUCTION IN UNIVERSITY RESIDENCE HALLS WITH TRAINED UNDERGRADUATES AS DISCUSSION LEADERS

Title VII Project No. 457; Grant No. 7-23-1020-107

a. Purpose

This study represents an attempt to bring together and to examine in interaction three relatively new but potentially significant innovations in higher education: televised instruction, increased emphasis upon undergraduate student participation in the learning-teaching process, and increased attention to the educational environment of residence halls.

b. Procedures

Each semester for three years, the lecture-demonstration part of a lower-division, general social science course was televised on open-circuit. There were two lessons each week, each transmitted twice. Students were encouraged to attend the telecasts in classrooms or in residences, whichever they preferred. Twenty-one of the lectures each semester were fifty minutes long, nine were twenty-five minutes long. The shorter lectures were followed by student discussion led by undergraduates who participated in a weekly training program to prepare them for this task.

Data were collected on student aptitude, achievement, opinion on relevant questions, attendance, and a variety of other pertinent factors. The data were analyzed primarily by analysis of covariance and chi square.

c. Results and Conclusions

1. When given the opportunity to view instructional television programs in their residences, a large proportion (about 50 per cent, generally, but more at certain hours) will do so.

2. The place of viewing seems to have no practical effect upon student achievement.

3. There appears to be no measurable difference in academic motivation between those who view in classrooms and those who elect to view in residences.

4. The choice seems to be almost wholly a matter of convenience - students view where it is most convenient for them to be when the class is televised. The proportion of students viewing in residences probably could be increased by an institutional effort to

establish and maintain optimum viewing conditions in student residence halls and increasing the number of courses offered by television in residences.

5. The evidence indicates that failure to take roll probably results in somewhat reduced attendance. However, regularity of attendance was not found to be related to academic achievement or other pertinent factors.

6. Students had generally more positive attitudes toward this course as compared to other courses which they were taking.

7. Students' attitudes toward television instruction as compared with instruction in large classrooms were equally polarized about the neutral point. Attitudes became more favorable toward television with exposure to television instruction and on retrospect. Students were especially favorable toward television in the residences.

8. There was no relationship found between attitude toward television and course achievement or academic aptitude.

9. Discussion sections on lectures, led by undergraduates trained in discussion techniques appropriate to the content of the lectures, can be organized and staffed for both classroom and non-classroom locations and will be attended voluntarily by a large proportion of the students enrolled in the course.

10. A training program for discussion leaders conducted by senior staff skilled in the techniques of group discussion can recruit and train undergraduates as effective discussion leaders to staff special short discussion sections.

11. The training program was most effective when it recruited the student discussion leaders from those enrolled in the course rather than from advanced undergraduates who were majoring in social science.

12. The undergraduates who continued in the discussion leader program developed strong academic and professional interests, and for them the program appeared to be equivalent to a special program intended to encourage superior performance.

13. Apparently the program had little or no effect on those who were not leaders. Initially, a substantial majority of the non-leader group favored discontinuing this element of the course, but by the end of the experiment the opinion of the class was about equally divided.

14. In general, the quantifiable data yielded no distinction between leaders and non-leaders in terms of academic aptitude, academic achievement, academic motivation, or other factors presumably related to selection or outcomes. However, there is an indication that leaders are more likely to plan to attend graduate school than are non-leaders.

15. The opinion of the leaders themselves as gathered by questionnaire, interview, and observation indicated that their participation and training contributed to their knowledge of and interest in the course, to their ability as student leaders and to their understanding of the role of the teacher. Nearly all of them agreed that it was a valuable experience which they would repeat.

16. In the time during which the program was in operation, there was opportunity to train only a few leaders to the point of leading regularly scheduled hour-long discussion sections. Findings suggested that undergraduates with proper supervision could lead regular discussion sections effectively although they did not exercise some responsibilities of discussion leaders such as giving grades and preparing semester examinations.

CHAPTER I

Introduction

This is a report of a study conducted by the Office of Instructional Television and the Department of Sociology at the University of Illinois. The experimental phase of the study was conducted for three consecutive years from July 1960 to June 1963. Prior experimentation with some of the major variables was conducted in 1958 and 1959.

There were three major interrelated conditions: (1) the lecture-demonstration part of a four credit, lower-division, general social science course was televised; (2) students were encouraged to view the telecast and hold follow-up discussion in residence halls and other space not normally used as classrooms; (3) undergraduate students, especially trained for their roles, served as leaders of discussion following some of the telecasts. Thus, the study represents an attempt to bring together and to examine in interaction three relatively new but potentially significant innovations in higher education; televised instruction, increased emphasis upon undergraduate student participation in the learning-teaching process and increased attention to the educational environment of residence halls.

It is well known by now that each year thousands of university students receive some part of their instruction by television. The number of institutions, faculty and students involved and the variety of ways in which television is used grow yearly. This development had its inception in the fact that college enrollments are swelling - they are expected to double from 1960 to 1970 - but no comparable increase in qualified faculty is in sight. Television, therefore, has been looked upon as a means of better faculty utilization. Partly with this motivation, the Department of Sociology of the University of Illinois began in 1958 to televise a two semester course in general social science, Community and Society. It was hoped also that as the faculty and staff became more sophisticated in the use of television the quality of the instruction might also be raised.

During the first year of that exploration period[1] the course lectures (two per week) were given by television to approximately half of the 375 enrolled students and by conventional lecture in a hall to the others.[2] Inasmuch as the lessons were telecast open-circuit, students were permitted to choose their sections (TV or conventional lecture) and, if television, their place of viewing. For those who wished to view in a university classroom, four classrooms were equipped for reception.

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[1] Released time for the teaching professor was made possible through a grant from the Ford Foundation.

[2] The study summarized here has been fully described by Janes, R. W., An Educational Experiment with On-Campus Open-Circuit Television, J. Educ. Soc., 34, 7, 300-308.

Forty-seven per cent of the students chose television instruction initially. By the end of the fourteenth week eleven per cent in the control section had switched to television and two per cent in the television section had switched to the control section. Of the students in the television section, approximately half chose to view in classrooms while nearly all the remainder viewed in residence halls. The students who selected the television sections were somewhat less talented academically (as measured by high school rank) than those who selected the conventional section and achieved somewhat less well in the course. The difference in course achievement was attributed to the difference in the initial aptitude.

During the school year 1959 - 1960, conventional instruction was discontinued and the lectures given only by television. Again students were given their choice of viewing location and again about half chose classrooms and about half residence halls. Although no specific studies were undertaken during this period, various developments and events led to the conclusion that the emerging situation was one marked by many interrelated, researchable problems which, if studied in depth, might have significance beyond a single campus.

1. Television seemed to provide an answer to the problem of increased enrollment in this course insofar as the lecture-demonstrations were concerned. However, the subject matter of the course was one which, like many others in the liberal arts curriculum, ought to be of real, living significance to undergraduates. It should not, we were convinced, be held within the confines of a TV presentation only. Therefore, discussion to stimulate and guide student involvement seemed essential. Indeed, opening up the possibility of discussion following the telecast in smaller, residence-centered groups, seemed to be one of the greatest virtues of the residence viewing situation. Discussion leaders, whether faculty or graduate assistants, are also in short supply and the residence viewing situation aggravated this shortage by encouraging the formation of more but smaller groups. Therefore, a way had to be found to increase the supply and effectiveness of discussion leaders.

2. The Offices of the Dean of Students, Dean of Men, Dean of Women, the President, as well as the faculty generally, had all become more interested during this period in utilizing the residence halls as a richer educational resource. A representative body of the faculty, assembled in annual conference, urged action toward this end; the President decided to move his traditional welcome to new students to television, made of it a more serious educational exposition and urged faculty and students

to meet in student residences to hear and discuss his message. This was successful and has been an annual event. The Deans of Students began planning for the use of television in systematic and continuing orientation of students.

3. The "pyramid studies" conducted at the Pennsylvania State University[1] indicated that undergraduates could perform a significant role in the educational process. Hence, undergraduates if properly trained might offer a large supply of discussion leaders. Furthermore, their involvement in the educational process would be consistent with recent suggestions concerning greater student responsibility for their own learning.

4. The University received a videotape recorder as a gift from the National Educational Television & Radio Center.[2] This opened up new opportunities: (a) with the possibility of recording and preserving instruction the cost of more carefully prepared instruction could be justified; and (b) the recorded instruction could be used in the systematic training of discussion leaders. It had been noted that television teachers improved in their performance as a result of seeing their recorded instruction. Could not recorded instruction, privately viewed and discussed prior to its broadcast, also be used as the heart of a training program for discussion leaders?

5. Lastly, if a way could be found to use the common areas in residences as instructional centers, some relief from overcrowding in classrooms might be provided. Therefore, if this procedure would be found adaptable to other courses a substantial savings in classroom space might be achieved. However, our main interest in television instruction in the residence is not so much the potential saving in classroom space as it is in improving the climate for this and similar courses by having it viewed and discussed among small residence-centered groups.

Thus, it seemed evident that a study of televised instruction in residence halls with undergraduate discussion leaders would be timely and probably significant.

Concern was felt in some quarters over the consequence of depriving students of their lounges, recreation rooms, and other common areas by diverting them to uses for which they were not originally intended. It was feared, too, that students might protest vigorously and effectively when they perceived this use of these areas in their residences not simply as a one-course novelty, but as part of a systematic analysis aimed at fuller utilization. Therefore, the Head Residents of various larger units made a survey of the actual usage of these spaces during class hours. They found it to be extremely light. Then, meetings were held with the presidents of each living unit at which time the full implication of the proposed study was made clear to them. They were asked to discuss it in their formal meetings and to complete a questionnaire. The questionnaire asked if a receiver was available, if it was usually in good order and able to receive the University station, if the room where it was located would be available for academic purposes during school hours, if it was suitable and available for discussion and if there were foreseeable problems likely to develop.

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[1] Pennsylvania State University, A Short Progress Report on: The Pyramid Plan for the Systematic Involvement of University Students in Teaching-Learning Functions, Division of Academic Research and Services, University Park, August 1958 (mimeo).

[2] Now, approximately four years later, with many institutions owning multiple recorders and predicating much of their instructional program upon their use, it is easy to forget the impact and significance of the National Educational Television & Radio Center grants.

Student opinion was found to be quite favorable to the proposed project and its implications. While many houses did not have receivers, some indicated that they would provide one if there were enough such usage to make it worthwhile. Few problems were foreseen, and the most common by far was the lack of a television receiver. Seventy-one units responded favorably to every item, and thus it was decided that insofar as student opinion was concerned the study was entirely feasible.

Accordingly, a proposal was submitted to the U. S. Office of Education for support under part B of Title VII of the National Defense Education Act. It was entitled: Experimental Teaching in Various Instructional Situations and Instructor Training in General Social Science Through the Use of Television and Videotape.

Briefly, a study was proposed in which the following conditions would prevail: a two-semester course in general social science with two lectures per week would be telecast over open-circuit television; students (approximately 450 each semester) would be permitted to view the telecast in classrooms, residence halls, or in other places of their choosing; undergraduate students would be selected for training and service as discussion leaders and would be encouraged to continue in this role in subsequent years.

Initially, it was assumed that the undergraduate discussion leaders would serve as leaders in the two regular discussion sections that were a formal part of the course normally met by full time staff and graduate students, and that a comparison among students and staff of varying levels of sophistication would be possible. In general, however, this did not prove feasible and, instead, approximately one-third of the televised lectures were reduced to twenty-five minutes, and the undergraduates led discussion following these lectures. In this way, their training and preparation was made more relevant to their assignment than it would have been had they led discussion in the other periods which tended to concentrate on readings and other matters not directly related to the televised lectures. During the final year of the experiment (and at the present time) there were several undergraduates who started with the program and stayed in it for several years while majoring in sociology. These students were given regular discussion sections to lead, and certain subjective information about them will be reported.

It had also been hoped initially to compare the students who watched at home or in other irregular places with those who watched in classrooms or in residence halls. However, the number of people who viewed telecasts in places other than classrooms or residence halls was so small each year that interpretation of results involving them is not feasible.

The data collected included mid-term and final examinations, measures of academic aptitude, and a wide range of personal inventory type information. In general, the data have been analyzed by analysis of co-variance holding several variables constant simultaneously and by chi square.

The grant was made in the Spring of 1960. The experimental part of the project has been completed, but its operational aspects will continue for at least another year or two under University sponsorship.

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CHAPTER II

Methods and Procedures: The Experimental Treatment and the Instructional Situation

The project called for testing the instructional effectiveness of certain teaching procedures which utilized or embodied televised lectures in a relatively novel fashion. These procedures were introduced into a course which was already being taught by televised lectures, and they required modifications in the arrangements by which the course was presented to students. These modifications were regarded, for the purposes of the study, as experimental treatments and the design of the study called for measuring their influence. Since the course, however, was not re-organized into a wholly experimental presentation, the controls which enhance the study of the influence of treatments could never be fully established. The primary method of measuring the influence of experimental treatments was through relatively rigorous statistical description of and inference about various outcomes or consequences of the innovations in the instructional situation. The nature of these innovations and the personnel, who as the agents of the project made them, are described in this chapter.

A. Staff

The staff of the project, with their general area of responsibilities, consisted of the following:

1. Co-director, Associate Professor of Sociology: Responsible for the content and organization of the course. He was the principal television instructor and supervised the academic aspect of the course. Proposed tests and measures.

2. Co-director, Associate Professor of Educational Psychology; Director, Office of Instructional Television: Responsible for satisfactory operation of the Instructional Television Unit. Proposed tests and measures. Responsible for most administrative aspects of the project.

3. Statistician, Assistant Research Professor: Supervised collection and analysis of data; designed computer analysis techniques.

4. Assistant Director, Instructor in Sociology: Primarily responsible for training and supervision of the undergraduate discussion leaders. The individual filling this position changed during the course of the project.

5. Production Director, Instructor in Sociology: Along with a producer-director of television, was responsible for preparing the course for television. Served as a discussion leader and trainer and, later, as assistant director.

6. Graduate Teaching Assistants: Led discussions in the two, fifty minute discussion periods on the readings each week.

7. Research Assistants: Assisted in collection and analysis of data.

8. Undergraduate Teaching Assistants: During the first year, five seniors majoring in sociology were selected, paid, and trained to serve as discussion leaders following the twenty-five minute television lectures. For reasons discussed later these individuals as a group did not perform satisfactorily. In the third year of the experiment, two seniors who had been in the project previously as peer discussion leaders were employed as undergraduate teaching assistants.

9. Peer-Leaders: These were undergraduates who, while they were enrolled as students in the course, received training and functioned as discussion leaders following the twenty-five minute TV lectures. Many of these students continued as discussion leaders after completing the course and - as indicated above - some became paid undergraduate teaching assistants.

B. The Demographic Context

The experiment was conducted at the main campus of the University of Illinois in Urbana. During the years 1960 - 1963, enrollment in Urbana ranged from approximately 22,000 students (1960-61) to 25,500 (1962-63). The combined enrollment for both semesters of the experimental course was 885 (1960-61); 821 (1961-62) and 834 (1962-63). (In 1961, changes were made in the regulations of the Department of Sociology which had the effect of reducing enrollment in the course). Enrollment in each of the six semesters ranged from approximately 400 to 450.

The University is located in the adjacent communities of Champaign and Urbana which have an approximate non-student population of 55,000. Other communities in the vicinity are primarily small, farming villages. Consequently, the student population is predominately resident (as distinguished from commuting), and the large majority of students (especially the freshman and sophomore women who were the primary subjects in this study) live in university residence halls or sororities.

The distribution of undergraduate student population according to place of residence is as follows:

Table 1

Distribution of All University Students According to Place of Local Residence

University Residence Halls	44%
Fraternity - Sorority	21%
Private Housing	34%

Approximately one-half of the students come from homes in Chicago and its suburbs.

With respect to students in the experimental course, the following information is pertinent. It is generalized from the three year period since there were only minor variations from year to year.

Table 2

Distribution of Experimental Students According to Sex, Year in School and Place of Local Residence

Sex:	
Male	13%
Female	87%
Year:	
Freshmen	70%
Sophomores	26%
Juniors	3%
Seniors	1%
Place of Residence:	
University Residence Halls	56%
Fraternity - Sorority	24%
Private Housing	20%

Proportionately more students in the class live in university residence halls than does the general student population, and fewer students in the class live in private housing. This is probably because of the high proportion of women in the class and the fact that the great majority of those enrolled are underclassmen.

C. *The Course*

The experimental course is given by the Department of Sociology and has the catalogue title *Community and Society*. It is a course in general social science, and its intention is to provide the student with some conceptions of the nature of various fields of social science, including anthropology, economics, political science, social psychology, and sociology. The primary aim of the course is to develop a more objective attitude toward human behavior. The course credit may be used to satisfy the general educational requirements of the College of Liberal Arts and Sciences. It is not considered a satisfactory introductory course for students majoring in sociology.

The course is offered in two semesters. Students generally take them in sequence but it is permissible to take them in reverse sequence. The students receive four credit hours for each semester.

The course is taught in two major - and somewhat distinct - parts. One part consists of televised lectures of which there are two per week, each transmitted twice. There are thirty of these each semester of which twenty-one are fifty minutes in length and nine are twenty-five minutes in length. Following each of the twenty-five minute lectures, students spend another twenty-five minutes in discussion of it led by the undergraduate discussion leaders. The number of short lectures followed by discussion developed out of the intention to have one such situation per week. However, it was found that a substantial amount of time was needed at the beginning of each semester to recruit discussion leaders and to train them. This was true not only for the first semester but the second as well in which it was found that about twenty-five per cent of the discussion leaders were new each year.

The other major part of the course consists of assigned readings in the social sciences with discussion about these readings occupying another two, fifty minute periods per week. There is of course considerable conceptual overlap between the reading and the lectures but little actual duplication of content. Hence it was theoretically possible to construct distinct sub-tests of the examination based on the content of the televised lectures and the content of the readings. However, although the combined tests had satisfactory reliability, many of the sub-tests were too short to be sufficiently reliable to permit analysis based upon them.

Some discussion sections on the readings are led by permanent staff, but the great preponderance of them are led by graduate teaching assistants. Only in the last year of the experiment (and the present year of the post-experimental period) have undergraduates been permitted to lead these discussion sections. In the latter instance, two undergraduates who had been associated with the discussion leader training program for two or more years were permitted to lead discussions on the readings under the general supervision of a graduate teaching assistant.

Students of the course are also assigned a term project. The mid-term and final examinations, the term project, and a general assessment of the student by the graduate discussion leader are the basis for establishing final course grades. It should be noted, therefore, that the graduate teaching assistant has a significant role in establishing a student's grade while the undergraduate discussion leader has none.

D. Television Production

1. Physical Facilities - Production

The University of Illinois has fairly standard, professional television production facilities. These include Image Orthicon and Vidicon cameras (Vidicon cameras are usually used for instruction unless unusual requirements for picture quality exist), film and slide chains, film production capability, and videotape recorders.

During the first year of the project, production was carried on in severely cramped quarters located in the football stadium. During that year another larger and more adequate building was acquired and remodeled so as to permit additional space for studios and other facilities.

However, it is doubtful that obtaining less stringent operating conditions had much effect *per se* upon the nature or quality of the course, since unused capacity was quickly filled by increased work load on new courses rather than by markedly increased attention to on-going courses.

2. *Program Distribution*

Programs were broadcast by the University's Television Station WILL-TV on channel 12. Channel 12 can be received anywhere in Champaign-Urbana and areas surrounding. This meant of course that all students in residence halls, fraternities and sororities, university classrooms, and private housing which had a television receiver should be able to receive an adequate signal. This was usually true but did not always work out in practice. Inasmuch as channel 12 is not normally on during the day, but regularly broadcasts programs for a minority audience only in the evening, television receivers (and antennas when needed in steel frame buildings) sometimes were not adequately tuned to the channel. When instances of poor reception were reported in connection with the project, technicians from the television unit examined the receiver and wherever possible corrected the trouble. No general maintenance program for television receivers except those in classrooms was undertaken, however.

The most common out-of-classroom viewing places were the living rooms, recreation rooms, television rooms of dormitories and sororities, church-related student centers, and the Student Union.

During the first two years, programs were broadcast at 8 a.m. on Tuesday and Thursday and repeated at 1 p.m. on those days. During the last year, the programs were broadcast at 10 a.m. and 1 p.m. of the same days. Initially, the programs were broadcast at hours when students were most likely to be in their residences in order to maximize the probability that they would view there. One period was switched to mid-morning in the last year to determine what change, if any, would occur in viewing habits when students were more likely to be out of their residences.

Inasmuch as the discussion leader training program utilized videotape recordings of the lectures about which they were to lead discussion, it is perhaps appropriate to point out that during the first year, the training had to be accomplished in the rather crowded and generally inadequate television studio. During that year, however, closed-circuit connections were installed from the main studio to various classroom buildings, and this permitted the training program to be carried on in university classrooms with programs transmitted to them by cable as needed. This substantially improved conditions for the discussion leader training program.

E. Discussions Led by Undergraduates

1. Selection of Leaders

a. Upper Classmen: In the original conception of the project, it was assumed that the undergraduate discussion leaders would be juniors or seniors probably majoring in sociology. Accordingly, at the project's beginning five seniors - all sociology majors - were recruited. They were designated "Undergraduate Assistants." Each was paid $500 for the academic year.

Following the first year, the advanced undergraduates - as new recruits to the discussion leading program - were dropped. It was found that these students could not seem to accept their role as discussion leaders. They seemed to bring knowledge without wisdom to their task and thus pressed continuously for a teaching and interpretive role, demonstrating their knowledge and sophistication to the undergraduates in terms which the undergraduates were not prepared for and - a cardinal sin in terms of the project - explaining the "errors" and lack of sophistication and subtlety in the television lectures. The concept of a pyramid also seemed to break down rapidly and for the same reasons - the upperclassmen tried too hard to impress the underclassmen with their grasp of the subject matter.

b. Peer-Leaders: Shortly after the project began, it became apparent that another source of discussion leaders should be explored; i.e., the class itself. There were two reasons for this; one, it became apparent that the number of discussion groups formed substantially exceeded - and probably would always exceed - the number of upperclass discussion leaders who could be recruited. Secondly, it seemed desirable to explore the possibility of constructing a kind of "pyramid" with full-time staff at the top, upperclassmen in the middle and underclassmen at the base. The underclassmen, it was thought, could be helped and counseled by the upperclassmen and would provide a pool or reservoir from which upperclass leaders of the future could be selected.

Accordingly, a questionnaire was distributed which asked students in the class where they were viewing as a group, if they could nominate someone from their group who might serve as a discussion leader, and if they would like to be a discussion leader themselves. From the results of the questionnaire, five girls in the class were selected and entered training as discussion leaders. Because they were leaders in the class in which they also were students, they were designated "peer" leaders.

After the direct recruitment of discussion leaders from upperclassmen was abandoned, major emphasis was put upon recruitment from the class itself. In addition, a special projects course was introduced which students who had been discussion leaders could take, using the continuation of discussion training and a research paper as the basis for satisfactory completion. Finally, students who were in the discussion training program for two or more years (and who by then were upperclassmen) could become undergraduate assistants and be paid $500 per semester.

The number of undergraduates in each category in each semester are given in the following table:

Table 3

Source of Discussion Leaders

	Peer-Leaders	Special Projects Students	Undergraduate Assistants	Staff and Graduate Assistants	Total
Fall 1960	5	0	5	3	13
Spring 1961	18	0	4	2	24
Fall 1961	22	10	1	2	35
Spring 1962	19	11	1	2	33
Fall 1962	29	5	2	2	38
Spring 1963	30	5	2	0	37

This system is still basically in operation at the present time (1963-64) with the cost of supporting the training program and the Undergraduate Assistants being assumed by the University.

2. The Training Program

The program to train discussion leaders is at the very heart of the project. It is described and discussed in detail in Chapter III. Briefly, the program contained these elements: (a) A one day workshop at the beginning of each semester at which time the project was explained and discussed; an overview of the course given by short excerpts from key videotapes; and the first didactic instruction in leading discussion begun. (b) Regular weekly meetings approximately two hours long in which instruction in the process of leading discussion was continued; a videotape of the following week's lecture was shown; socio-drama and role playing were introduced to enable students to work out and demonstrate techniques for handling problems of discussion; and general question-answer and discussion over the problems of the course and their role in it were encouraged.

3. The Discussion Sections

The table below shows the number and place of short discussion sections each semester.

Table 4

Number and Place of Discussion Sessions

	Classroom	Sororities	Dormitories	Other	Total	Size Range	Average Size
Fall 1960	9	4	5	1	19	4-31	13.2
Spring 1961	10	4	9	3	26	2-24	9.0
Fall 1961	15	3	17	2	37	4-19	9.0
Spring 1962	14	6	14	2	36	4-16	7.6
Fall 1962	22	8	11	1	42	4-15	7.4
Spring 1963	20	5	12	3	40	3-12	6.1

It had been the practice of this course not to require attendance at lecture or discussion periods. This practice was continued during the experimental period. In the year 1962-63 actual enrollments were sampled systematically. The differential effects of habitual attendance and high non-attendance are reported in Chapter V.

CHAPTER III

The Training Program for Undergraduate Discussion Leaders

The design of the project called for training undergraduates enrolled in the course to lead discussions of the televised lectures. The purpose of this experimental procedure was to explore the possibilities of utilizing capacities of the undergraduates themselves as one of the instructional features of the course. Two considerations suggested the desirability of experimenting with undergraduates as leaders of discussion: one was a general interest in the possible utility of a pyramid system for discussion leaders in a large course in general education such as this one; the other was the specific necessity of staffing the many discussion groups in classrooms and residences which were to carry on discussion of the televised lectures viewed in these places. The specific purposes of the peer-leader training program were to develop competency and skill in the art of leading small discussion groups and to give the peer-leaders a better understanding of each of the one-half hour lectures on which they would lead discussion.

Participation in the program was voluntary and no academic credit was given for it. A student who volunteered for the program had to be either enrolled in Sociology 104-105 or to have completed the course. Each year, a few students were chosen to be demonstrators of discussion techniques and to assist in the direction of training sessions. These students were paid for these services and were given space in the office from which the program was directed, once the program was underway. During the several semesters the program was in full operation, the number of students who regularly participated in the program was between five and eight per cent of the course enrollment.

A. Operation of the Training Program---Staff and Responsibilities

The training program for the undergraduate student discussion leaders was developed over a period of several years, and during this time there was continuous experimentation with procedures. The description of the program can, then, best be given in terms of the arrangements which were adopted finally as the standard procedures of operation. This manner of reporting reflects the fact that experimentation was necessary in defining the necessary duties and roles of the training program and in establishing a chain of responsibility and communication between these roles.

Throughout the development of the project, however, there were three discernible levels of duties and functions within the training program. They were: first, the responsibility for administration and direction which also called for knowledge of the art of group discussion and of the content of the course; second, an intermediate level involving co-ordinating the peer-leader training with assignment of leaders to places of discussion. It included keeping the record of the students who volunteered as discussion leaders and identifying places where discussions might be held; and third, responsibility for conducting effective discussion by small groups of students on the content of selected short lectures. During the various phases of the project, the upper two levels were staffed by personnel employed by the project. The academic rank of those in the first level included full-time instructors in the Department of Sociology and a half-time teaching assistant in the Department.

The second level included teaching assistants, research assistants and advanced undergraduates who had worked in the project for several semesters. The third level consisted of undergraduates who were not rewarded formally for their services although a number of them used their experience in the program as the basis of term reports either in Sociology 104-105 or in an Individual Topics course offered by the Department for undergraduates. The number of the staff at various levels, their duties and the requirements of time for the program once it was operating effectively are shown in the following Table.

Table 5 a

Levels of Duties of Staff in Training Program for Undergraduate Discussion Leaders

Level	Duties	Academic Status	% of Appointment for Duties	No. of Staff
Supervision & Administration	Planning Training Program, Selection of Staff, Coordination with Soc. 104-105	Instructor	1/2 time	1
Demonstration of Discussion, Keeping Records	Assisting in Training Session, Contacting Residences about Discussion, Conferences with Discussion Members, Administering Questionnaire	Teaching or Research Asst. or Undergrad. on hourly employment	1/2 time up to 20 hrs. per week	3
Leading Short Discussion	Attending Training Sessions, Enrollment in Special Discussion Sections (if taking course for credit)	Undergraduate and Enrollment in Soc. 104-105	4 hrs. per week	30-40

The schedule of the training program varied somewhat depending on whether or not it was the first or second semester of the academic year. The effort was made at the end of each semester to secure volunteers for discussion leading for the following semester. This effort, of course, was most productive at the end of the fall semester since only a small proportion of the students completing the spring semester were expected to return to the course in the succeeding fall. Most of the recruiting for the fall semester, therefore, had to be accomplished at the beginning of that semester through announcements in lectures and in discussion sections of the nature of the program. It was also necessary at this time to locate dormitories or student residences in which there were sufficient students in the course to provide for a discussion group. The first of the nine short lectures per semester was scheduled for the fourth or fifth week of the semester so all arrangements had to be completed by that time, and the training program had to be started.

The official beginning of the program for a semester was an all day workshop held in the television studio on the Saturday of the third or fourth week. (When the television studio was in the football stadium, the team schedule was a controlling factor). Each subsequent week the discussion leaders met once for a two and one-half hour period to preview the short lecture for the following week and to develop a discussion strategy for that lecture. During the last semester of the project, this meeting was formalized by making it a non-credit regular discussion section of Sociology 104-105 listed in the semester class schedule. This procedure guaranteed the availability of classroom space for the training program and called attention of students to the existence of the program. The schedule of the program over a semester is indicated in Table 5 b.

Table 5 b

Typical Semester Schedule of Training Program for Undergraduate Discussion Leaders

Week of Semester	Activity
1 - 3	Publicizing Program Recruiting Volunteers Determining Locations of Discussion
4 or 5	Workshop Introducing Volunteers to Staff Outlining Program Previewing First Lecture
4 - 12	Weekly Meeting to Preview Lecture of Following Week and to Develop Leadership in Discussion
13 - 16	Publicizing of Program for the Following Semester Select Volunteers Staff Review of Semester Program
14	Announcement of Undergraduate Staff Appointed for Following Year (Normally Spring Semester)
15	Social Event Sponsored by Permanent Staff for Undergraduate Leaders

The items noted in the 14th and 15th week were regarded as of special importance by the staff of the program because they were among the few tangible rewards which could be accorded the undergraduate leaders in the program. The undergraduates committed on the average four hours a week to their duties in the program, and for many of them the appearance in front of a group, especially if it were not in their own residence, was obviously demanding. The promise of employment in the program for demonstrated competence, therefore, seemed a definite encouragement to continue in it. The opportunity to work more closely with faculty and staff also seemed to be a consideration in the minds of many students who joined the program.

The success of the training program depended upon its ability to encourage a sufficient number of volunteers each semester and to hold a number of these over several semesters so that they developed skills and capacities to serve as demonstrators and assistants in the training sessions. The functions noted in Table 5 b appear to be a minimum schedule of activities necessary to maintain these requirements. Table 6 indicates the rate of recruitment during the project.

Table 6

Number of Student Volunteers for Undergraduate Discussion Leaders Seven Semesters of Program

Semester	Number of Volunteers Who Served as Discussion Leaders Throughout the Semester	New Volunteers (Not Previously in Program)
1st	5	--
2nd	18	14
3rd	32	24
4th	30	14
5th	34	20
6th	35	21
7th	58 (volunteered) 38 (selected)	32

Several observations on the dynamics of volunteering for and continuing in the undergraduate discussion leading program can be drawn from Table 6. It is obvious that the program was able consistently to generate undergraduate volunteers. It was not, however, in the estimation of the staff of the program until the fifth or sixth semester of its operation that it was accepted as something other than an experimental novelty in the course. The seventh semester was the first in which there was an excess of volunteers over the number actually selected as leaders. During the first year and one-half of the program, a number of students were not asked to continue during the next semester because their performance as discussion leaders did not seem to be adequate. Seven of those who served during the second semester and ten from those of the third semester were not encouraged to return. This rather high turnover rate apparently reflected two conditions: first, the students themselves did not have a clear anticipation of their duties; and second, the techniques of the training program had not been developed to a point of maximizing the potential of students as discussion leaders. The early semesters also had the highest rate of voluntary return of former discussion leaders who in the opinion of the staff were qualified. Among these students there seemed to be a genuine enthusiasm for the program. By the seventh semester, those students with previous experience who were continuing seemed to be strongly attracted to the possibility of appointment to the paid positions. Several others, also, had become sociology majors and were using their experience with the program as a basis of information for reports in courses.

The institutionalization of the program within the framework of the course was demonstrated in the seventh semester when the senior staff member unexpectedly took a position in another university. An undergraduate who had been in the program for six semesters and a graduate teaching assistant temporarily took over its direction without any major difficulties in transmission of duties.

B. The Content of the Training Program

The fulcrum of the training program was the weekly session devoted to previewing the short lecture for the following week and to developing skills in discussion leading which might be applied to problems presented by the lecture. By the sixth semester of the program, a standard format for these sessions was developed which included a number of instructional materials and devices which were utilized throughout the semester. One of the first tasks of the program was the preparation of a manual which described the process of learning through discussion and presented effective techniques for leading small discussion groups. This manual was mimeographed and subsequently printed so as to be available to the discussion leaders. (cf. Herrick, Robert, A Manual for Peer-Leaders, Champaign, Illinois, Stipes Publishing Co., 1963). The manual was the principal text used in teaching the principles of discussion leading.

The program staff, in time, developed a set of procedures which both provided an apparently effective instruction in techniques of discussion leading and a comprehension of the content and materials of the course as they were pertinent to the discussion sessions on the short lectures. There were two training sessions scheduled each week to give the students some flexibility in fitting the sessions into their class schedules. About half of the peer-leaders, usually in number from fifteen to twenty, and the whole staff came to each session. The plan for each session was normally set up to meet four goals (1) understanding the lecture to be discussed (2) anticipating student response to this lecture (3) learning to perform as a discussion leader with emphasis on guiding discussion to the student response which might be engendered by this lecture (4) actual illustration, normally by the staff, of good discussion techniques.

The conduct of the sessions was essentially much the same. The peer-leaders, with the staff, met in a classroom with a television set. The interaction was rather informal, but each meeting began with an agenda of what was to be accomplished. The typical session then had the sequence of (1) previewing the televised lecture for the following week (2) breaking up into "buzz-groups" of four or five persons to discuss the lecture and to identify a major discussion problem which it might stimulate (3) reassembling into a circle (the classroom chairs were movable) to report to the whole group the reaction to the lecture and any identification of a problem (4) performing a sociodrama simulating a peer-led discussion group treating one of the problems reported from the buzz sessions and (5) evaluating the sociodrama in terms of issues relative to discussion leading and to the course viewpoint. At other times, however, the format of the session was modified to handle special challenges produced by certain lectures or by particular subject matter. For example, after three or four training sessions, it was generally the practice to devote one whole session to discussing the kinds of problems which had developed in the course of the first short sessions. Sometimes, a particular motion picture or a specific topic such as social class or race relations would be singled out for emphasis.

The manual was used as the guide both as to how a sociodrama should be enacted and as to the typical dynamics of and roles in small discussion groups. The identification of discussion problems by the "buzz-session" served to predict the response students would make to the lecture. Originally, a guide to each lecture was prepared by the staff and distributed before the preview with the instructions for the peer-leaders to look for certain points in the lectures which the staff anticipated would be good bases for group discussion. Under this plan, the training sessions were to be devoted to showing the meaning of the selected points in terms of the context of the course. These points often involved the presentation of information or the utilization of a social science concept such as functionalism, class-structure or ideology. This method, however, did not turn out to be successful because the peer-leaders in their discussion groups then tried to structure the discussion around the guide questions rather than develop the discussion around questions initiated by the discussion group itself. Experience revealed that discussion group questions originally raised by the students were less likely to involve cognitive factors than affective response to the lecture or questions of practical or personal implications of social science concepts such as cultural relativity or minority discrimination.

The judgement of the staff, therefore, was that effective discussion was that which started from such spontaneous questions and worked in the direction of giving answers within the context of the course. Training of peer-leaders for this style of discussion was achieved more effectively starting from the peer-leaders' own reaction to the lecture in the "buzz-session" and exploring its possibilities through the sociodrama. It was thought in the evaluation of the sociodrama itself that the staff sought to place the selected discussion problem within the context of the course.

In addition to the formal training program, informal conference and conversation between peer-leaders and senior staff members was an important influence contributing to the development of the skills and capacities of the student discussion leaders. Any volunteer in the program who had problems in his role could arrange an appointment with the senior staff member in charge of the program. Many of them availed themselves of this opportunity, especially at the beginning of the project when the training program was still experimental. Also, after each training session, it was routine for the senior staff members to go out to coffee with peer-leaders who wanted a chance to talk informally about aspects of the program. These gatherings often lasted several hours and covered a wide range of topics and interchange of suggestions and information which helped to clarify for the peer-leaders both the purposes and techniques of discussion. A number of peer-leaders stated that they felt these sessions were among the most useful devices intended to promote skill in discussion. The senior staff members also felt that they made an important contribution, although this might demand up to three or four hours a week of their time. The students who most frequently participated in these gatherings were those who appeared most committed to the program and who served as peer-leaders for more than one semester.

C. The Response of the Peer-Leaders to the Training Program and Their Instructional Effectiveness

The response of the peer-leaders to the training program, including the performance of their duties, was strongly positive. Two major measures revealed this affirmative attitude. One was the regular attendance at training sessions. A second was responses to items on several questionnaires in which they ranked the value of short discussion sections much higher than did other students. Peer-leaders also reported on these questionnaires a much greater enthusiasm than other students for continuation of the short discussion and of the attendant training program. The positive response of peer-leaders to their role should, therefore, be reviewed in terms of the effectiveness of this role in the instructional goals of this course.

The data on the effectiveness of the peer-leading program are drawn largely from the observations of the regular staff of the program, who each semester attempted to summarize developments in the program. Questionnaire information comparing discussion leaders to other students were also collected throughout the project. A significant addition to both of these sources was the statements secured from peer-leaders themselves through interview. By the end of the sixth semester of the program, the staff felt that procedures had been formalized to the point where the duties of the peer-leader role were clearly defined in the training program. At that time, an hour long interview was held with thirty-three of the leaders for that semester, and from their responses it was possible to get a good picture of their perceptions of the program and some indications of its effectiveness for the other students in the course.

A major aim of the training program was to provide the beginning peer-leader with some sense of competency in his capacity to lead a discussion effectively. The majority of peer-leaders were leading discussion groups in places other than their own residences, and often during their first few sessions many of them evinced a kind of psychological panic after being confronted with a group which did not respond readily to the discussion about the lecture. The staff of the program had not planned for the peer-leaders to develop broad substantive knowledge about social science which might serve to impress the members of their groups and aid in the resolution of issues raised in discussion. The peer-leaders also had no formal authority to which they could resort to control or direct discussion. The one principal resource permitted by their role through which they could promote an instructional experience for the members of their group was skill in developing an effective discussion about the topics presented in the lecture. It was the development of this skill which was to provide the desired sense of competency for peer-leaders.

The staff of the program were convinced that after several semesters of experimentation with the program that the procedures adopted were reasonably effective in developing such a skill and competency. In order, however, for the peer-leader to maintain his effectiveness as a discussion leader, it also appeared to be important that he develop an identification with his special role. This identification was consciously sponsored by the staff through the various kinds of rewards already noted. It was also encouraged through enrolling peer-leaders in regular discussion sections which were reserved for them and which were led by either senior staff or by the person in charge of the training program.

Evidence of the common identification pattern is seen in the data of Appendix III showing that the sociometric choices for both task and social cohesion of peer-leaders are concentrated among other peer-leaders rather than among persons living in the same residence or members of the discussion groups led by peer-leaders.

Other evidence of such identification is shown by a trait which was observed to develop among peer-leaders semester after semester when they began, after a number of weeks of peer-leading, referring to other students in the course as "they" and to themselves as "we." They also showed a sense of lower social distance between themselves and the senior members of the program staff. On occasion, they would refer to them by their first names, and at times, in the evaluation of the sociodrama in the training sessions, they would defend strongly interpretations of problems differing from those offered by the student demonstrators. An example of identification with the staff of the training program was offered when the original director of the program left for another appointment. The peer-leaders took up a collection among themselves, held a rather elaborate farewell party and presented the director with an expensive set of books. On another occasion, the peer-leaders, in their own discussion section, initiated, by prearrangement, a discussion of a topic in which they all reversed their usual roles within the classroom situation performing in opposition to their usually held viewpoints of the course material contained in the lectures and in the readings. All of this evidence was regarded as indicating that the peer-leaders not only responded positively to the training aims of the program and developed a strong identification with their roles but also developed insight into and awareness of themselves which increased their sense of responsibility as discussion leaders. These results were normally obvious after a peer-leader had completed one semester of work in the program.

The strong sense of identification with the peer-leader role must be contrasted with the prevailing indifference and negative views toward the short discussion expressed by a large number of students in the course. These views were epitomized in the results of a questionnaire administered in the fifth semester of the project, in which about two-thirds of the students, other than peer-leaders, felt that they had learned least from the short discussion sections of all the instructional features of the course. The staff of the program had been aware of the prevalence of this attitude from the beginning of the project and had tried to secure information pertinent to it. Observers had sat in on the short discussion sections, senior faculty had substituted for peer-leaders in such discussions and had quizzed members of the group on their reactions to the program, students had been informally interviewed on their views, and leaders of the regular discussion sections had been asked for any feed-back they had received on the conduct of the short discussion sections. The findings from these sources were compared to those secured from the interviews of the peer-leaders at the end of the sixth semester, and it appeared that the peer-leaders' own interpretations not only confirmed the substance of the other data but also gave the most perceptive explanation of the typical student reaction.

The conclusion of these observations was that most students do not seem to regard as significant an instructional situation conducted by persons who are not responsible for some formal evaluation of student performance in the situation. The implication here is that the instrumental orientation of students toward learning situations is so strong that unless some instrumentality for the student is satisfied by the situation, he is not favorably disposed toward it.

The program staff accepted this student viewpoint and tried to meet it by indicating that the short discussion sections would treat subject matter which would be covered in the course examinations. A number of questions were included on the mid-term and final examinations based, insofar as possible, only on lecture materials. At the same time, however, no guarantee was given to the peer-leaders that they would acquire any special knowledge which would help them answer these questions, since, for purposes of the grade in the course, they were treated by their own regular discussion leaders on a par with other students in the course. This point was made clear in the training program by indicating that the development of understanding of the course viewpoint for the benefit of peer-leaders did not extend to the specifics of questions to be asked on examination. The peer-leaders neither knew in advance the content of the questions nor were they required either to explicate or to defend the answers in their discussions. Thus, for many students, the peer-leaders apparently did not represent a role related to the instrumental goal of grades.

Despite the prevalence of this attitude, there is strong evidence that the efforts of the peer-leaders constituted a definite educational experience for students whether or not they recognized it. The following tables, as an example, tend to bear out this contention. The data were gathered from interviews with thirty-three peer-leaders of whom fourteen had more than one semester's experience in the program. These peer-leaders had been leading groups ranging in size from four to sixteen members with seven students being both the median and modal number. The interviews were conducted late in the semester by a graduate research assistant, and some of the responses reflected both the type of subject matter scheduled in lectures and readings at that date and the tendency of class cutting in all classes to increase at this time. The co-operation of the peer-leaders in the interview was excellent. Response appeared to be frank and often critical of aspects of the program and of students in the course. Certain of the interview items developed information on attitudes of peer-leaders and their groups which could be cross-checked against the results of questionnaires administered independently of the peer-training program. The results from three such items are shown in Table 7 a.

Table 7 a

Attitudes of Peer-Leaders and Their Estimates of Attitudes of Their Discussion Groups Toward Course Lectures and Regular Discussion

Interview Item	Attitude Favorable	 Neutral	 Unfavorable
Peer-Leader Attitude Toward Conduct of His Regular Discussion Section	26	3	4
Peer-Leader Attitude Toward Televised Course Lectures	18	2	13
Peer-Leader Estimate of Attitude of Discussion Group Toward Televised Course Lectures	11	5	17

Table 7 a shows a pattern of responses which agrees rather closely with the results from the retrospective survey reported in Chapter V. Peer-leaders are more favorably inclined toward the regular discussion section than toward the lecture. Peer-leaders are more favorably inclined toward lectures than are other students. The findings of Table 7 a, then, suggest there is a certain reliability in the interview responses of the peer-leaders.

If this reliability can be extended to information reported on the operation of the short discussion program, the information contained in the following table is of great interest in respect to the peer-leader role and to the student response to this role. Table 7 b shows these findings in a series of statements summarizing the responses to interview items which concerned the short discussion sessions.

Table 7 b

Summary of Interviews With Thirty-Three Peer-Leaders on Aspects of the Short Discussions of Televised Lectures

Item	Response		
1. The attitude of most members of your group to the operation of the short discussion is?	Favorable 23	Neutral 2	Unfavorable 8
2. Do most students in your group appear to regard attendance at the short discussion as voluntary or involuntary?	Voluntary 11	Combination 7	Involuntary 15
3. Have members of your group discontinued attendance at the short discussion?	No 13	Yes, 1 or 2 10	Yes, more than 2 10
4. Does the group as a whole appear to be active or passive in discussion?	Active 18	Neutral 5	Passive 10
5. What has attention of the group been during the short lectures?	Good 20	Fair 8	Poor 5
6. Do most of the students seem to enjoy discussion?	Yes 18	Sometimes 11	No 4
7. Do most of the students seem to feel that they learn something from the discussion?	Yes 18	Sometimes 10	No 5

8. What kind of discussant roles have appeared most frequently in your group?

Role	No. of times mentioned
Information seeker	19
Information giver	18
Opinion giver	8
Clarifier	9
Apathetic	6
Antagonizer	5
Summarizer	2

9.	To what extent does your group regard you as the leader of the discussion?	Very much 30 Somewhat 1 Very little 2
10.	What one condition do you feel would contribute more to the stability of your group?	Most frequent answers: To familiarize students with course materials To teach students to generate own ideas or to think independently To discuss points not covered in regular discussion To make television more personal To show there can be different points of view and to reconcile them by discussion
11.	When apathy is a problem in your group to what do you attribute it?	Most frequent answers: Feel grades and exams not involved No interest in subject Do not understand the lecture Feeling that social problems no concern of theirs--feeling nothing can be done about such problems Poor students Lecture too theoretical or abstract
12.	When response is good in your group to what do you attribute it?	Most frequent answers: Understand the lecture Find subject personally interesting - ex. social class, prejudice and contemporary problems Motion pictures used Small size of group Lecture topic challenges beliefs or values--ex. communism

The results of Table 7 b tend to confirm the impressions of the staff about the operation of the short discussion program, although the evidence available to the staff was not gathered in such a systematic fashion. It is obvious that there is a great range of variation in behavior in the short discussion groups. There is only one item, the extent to which the peer-leader is regarded as the leader, on which there is strong agreement. The broad range of student behavior is partially explained by the fact that the peer-leaders had relatively limited authority and were not regarded as evaluating and grading student performance. (The fact that many students regarded attendance as involuntary is largely explained by the procedure used this particular semester of taking attendance to determine the number of students who actually appeared at the short discussions). It does seem certain, however, from these data that there was a great deal of involvement of students in the short discussions and that the peer-leaders perceived this activity and were able to analyze much of its content. They were able to identify the most frequent discussant roles; they had explanations of the responses to the stimulus of discussion; they had conceptions of the purpose of the program, and they had a basic suggestion of how effective discussion can be promoted by making the location of the discussion more congenial for participants. Their explanations of apathy and effective response by students are very similar to those offered by instructors with more control over their classes. The student response stimulated by the peer-leaders certainly would seem to be of an instructional nature which contributed in some degree to student understanding of the subject matter of the course. The opportunity for guided discussion and common exploration of points of view would also seem to provide learning in the liberal education tradition, although there were no specific measures which could show the degree to which the short discussion promoted such learning.

D. Factors Influencing the Quality of Student-Led Discussion

In analyzing the quality of student-led discussions in this project, it should be kept in mind that the peer-leaders themselves were not the only factors influencing the instructional effect of such discussion. The peer-leader is only one of the conditions which operated to make the activity induced in the discussion session into a learning experience for the students involved. The other conditions should be noted to help in the assessment of how effective the peer-leaders were as instructors, since in some cases these conditions could work against the development of effective discussion, and in other cases they could promote it, independent of the part played by the peer-leader. The program staff and the peer-leaders themselves, as shown by Table 7 b, came to the conclusion that there were at least three distinct elements involved in creating the quality of a discussion: (1) the stimulus for or topic of discussion, (2) the type of students in the discussion, and (3) the conditions under which the discussion took place. Certain kinds of stimuli apparently encouraged better discussion, i.e., lectures on class structure or race. The types of students who promoted effective discussion were, according to the peer-leaders, those who liked social science or who had a good grasp of the course viewpoint. "Conditions" included size of the group, location of the discussion --- classroom, dormitory, or sorority and the seating arrangement, and third, the skill of the discussion leader as represented by the amount of his experience in the program. In the estimate of the staff, and this could only be on the basis of fragmentary observations, because there were never enough cases for statistical control, the size of group most favorable for effective discussion was the modal size of the short discussion groups, seven students plus the leader. As to location, sororities appeared to be most conducive to effective discussion and classrooms least so, with the exception of seminar rooms. (cf. Appendix I for an examination of the relation between instrumental orientation of discussion groups and the influence of size and location). The seating arrangement which was most favorable apparently was one in which the participants could see each other face-to-face. (cf. Appendix IV). In general, the greater the experience of the leader, the more effective the discussion.

The consequences of the varying mix or combination of conditions would be difficult to predict with precision. For example, an inexperienced discussion leader might report having an excellent discussion on a stimulating topic such as communism with an average sized group containing students interested in social science. At the same time, an experienced leader might have a poor discussion in a sorority group with a topic such as the relation of Gross National Product to the need for public policy.

In terms of the general strategy pursued by the staff of the program, the elements which were regarded as beyond the control of the program were the kind of student, location, and seating arrangement in classrooms. Those which could be manipulated were the skill of peer-leaders and the stimulus provided by the lectures. Size of group could be controlled to some extent by splitting large groups, but it was generally impossible, largely because of student schedules and the facilities of many places of viewing, to increase size of groups. The effectiveness of the short discussions, then, probably reflected the quality of the lectures and the skill and effort with which the peer-leaders addressed themselves to their task. The other conditions worked as somewhat random influences, but the final result was apparently relatively effective discussions since the majority of students came to regard the short discussions as contributing to their interest in the course.

The skill in discussion leading of some of the more experienced peer-leaders was occasionally compared to that of the graduate assistants teaching the regular discussions sections, often to the disadvantage of the graduate students. A number of these teaching assistants were beginning graduate students who apparently had had no experience with discussion aimed at maximizing student participation and developing and resolving various viewpoints. As instructors, they had the responsibility of determining the grades of students in their classes, and often the interaction between student and instructor was structured around conveying information to students which was regarded by both parties as instrumental for doing well on examinations. During the course of the project, a number of students complained to the program staff that their regular discussions were not as interesting an experience as their short discussions. Occasionally, a peer-leader could not be enrolled in the regular discussion section reserved for them and was placed in a typical regular section. Several of these commented that they felt the graduate assistant in charge of their section could have benefited from the peer-leading training program.

The program staff attempted to keep the regular teaching staff informed of the progress and purposes of the program. In staff meetings of the senior faculty of the course and graduate teaching assistants, emphasis was placed by the senior members upon the desirability of promoting in regular quiz sections effective class discussion in which a large number of students participated and in which a variety of viewpoints and questions were stated. There was, however, no systematic instruction for the graduate assistants in the principles of group discussion, and, in some cases, graduate assistants with a strong identification with their professional discipline seemed more concerned with transmitting subject content to their students than in encouraging student reaction to the problematics of this content.

In all fairness to the graduate teaching assistants, it should be noted that the senior staff in the course had indicated to them that they were expected to develop as much substantive knowledge about the topics of the course as possible. Their competency was regarded as being in knowledge about subject matter. Their expected role thus promoted a more passive response on the part of their students which they were further able to reinforce because of their authority to give grades. Students who valued the freedom, expressiveness and problem-solving aspect of organized discussion were, therefore, occasionally disposed against their instructors who were not adept at maintaining such discussion.

These findings suggested that the competency of the short discussion leader to encourage discussion was the major criterion by which he was evaluated by his groups, and that groups were able to distinguish between those leaders who were more or less effective. Unfortunately, no data were collected systematically to describe the attributes of competent peer-leaders. One effort was made in this direction by setting up a research design which called for observation groups with leaders who were regarded as most effective and groups with least effective leaders. Once the peer-leaders themselves had learned of this effort, their response was one of concern and anxiety that they were being "checked on" in a way which they did not regard as consistent with the spirit of the training program. Rather, therefore, than take a chance on disrupting the delicate but effective balance achieved by the training program, the research plan was abandoned.

E. Peer-Leading and Student Career

As far as most of the peer-leaders themselves are concerned participation in the training program and in leading discussion was both an important learning experience and a significant alternative to other academic activities. They felt that they learned more about the subject matter of the course, developed intellectual and/or leadership skills and learned more from being in the program than if they had not participated. The statistical data does not make clear whether these students had superior capacity as measured by intelligence tests to that of the non-peer-leading students in the course. It is clear from Appendix III that some students of superior academic capacity and performance demonstrated by the fact that they were enrolled in "honors" section were not likely to volunteer as peer-leaders. The actual academic performance of peer-leaders in the course, as measured by grades on final examinations, is apparently only slightly better than that of all other students in the course. It is difficult to say, then, that participation as a peer-leader would encourage a higher academic performance measured by tests in the course than would have been expected had not the student participated. Despite this fact, the peer-leaders did feel that they secured significant positive benefits from being in the program.

The record and characteristics of peer-leaders who stayed in the program over several semesters and, in most cases, became members of the undergraduate staff does demonstrate both superior performance and a desire to go on for graduate or professional training. The first six students to complete five consecutive semesters participation in the program had the following record. Five of the six were either planning to go or had gone to graduate school. Two of these five already had been awarded graduate fellowships in strong graduate programs. Four of the six had become sociology majors, although all six had considered other fields. Four were considering continuing academic careers after leaving graduate school. Four were male and two were female which may be important since it reverses the actual sex ratio in the course during the period in which they had participated in the peer program. These traits would suggest that the program was about to attract, to hold and to guide some superior undergraduate students into academic careers. In this respect, the program appeared to operate as a type of special recognition of student abilities, which encouraged an active interest and response among certain types of students capable of the kind of performance consistent with high standards of a university or college education. This finding would also suggest that the program operated in a manner similar to other special recognition programs, such as honors curricula, established for undergraduates.

F. The Significance of Videotaped Lectures in the Training Program

One final consideration might be introduced as to the nature and effectiveness of the peer-leader training. Is the use of television, specifically the pre-viewing of televised lectures, an essential element in this particular training program? Would it have been possible to carry on training for peer-led discussions by using some other stimulus for the training session? Would a reading assignment, for example, have served equally well? Could a short lecture have been prepared and delivered in the lecture hall to be followed by short discussions in small peer-led groups? These questions were considered by the staff during the course of making and remaking the short lectures which were the core of the peer-led program.

This concern obviously did not involve the design or conduct of the present project but rather the question of the possibility of generalizing the training program to courses which were taught by a medium other than videotaped lectures.

The staff of the program, frankly, were not able to answer this question based on any objective estimate of the differential instructional effectiveness of a televised lecture over some other instructional stimulus which might have served as the basis of a peer-led training program. The belief of the staff was, however, after several years experience with short lectures as the key element in the training sessions, that it was unlikely any form of instructional stimulus would be superior in either didactic effectiveness or in the simple economic utilization of the various resources available for a training program required for peer-led discussions.

This belief as to the didactic effectiveness of televised lectures was based on the following two observations. First, the fact that it is possible to evaluate a videotaped lecture by viewing it after it has been prepared, and then either to revise it or to remake it, provides for constant upgrading of a series of televised lectures. The staff felt that the series of lectures scheduled to be retained at the end of each semester was, in some degree, better than the series with which they began. Secondly, it is obvious that the use of television makes possible the utilization of visual materials such as slides, demonstration, film clips and the like which might not be incorporated into a lecture, because of the unusual effort required to present them, unless the lecture were preserved by videotape. There was no doubt in the mind of the staff of the program that the lectures in the course contained much more of this kind of material than when the course had been taught in regular classroom lectures. Again, the feeling of the staff was that this enhanced element of visual presentation added something to the instructional effectiveness of the lectures which were lacking in the traditional lecture presentation. This hypothesis was not, partly because this was not an issue in the original design of this research project, ever actually tested.

The question of whether or not videotaped lectures were the most economical device to be utilized as the base of the training program is perhaps more amenable to demonstrable estimation. Once the lectures were videotaped, the only cost of showing them for the training sessions was the studio charge for replays. The efficiency of this method, of course, can only be calculated against the costs of rehearsals or delivery of the same lecture before the training session by the senior lecturer. There certainly should be some economy if the same videotaped lecture were used for several years as part of the training program. At the same time, the actual cost of the short lecture itself, as part of the scheduled course presentation, is independent of the costs of the training program. In terms of dependability and flexibility of scheduling a videotaped lecture is superior to the human lecturer and is probably a more predictable resource for a particular training session. All of these considerations suggest that, at least over a several year period, a set of videotaped lectures is a more economical resource for this type of training program than some human performance not preserved by a mechanical medium. These considerations suggest the conclusion that this type of training program operates best through videotaped lectures as the principal feature of the training sessions. The estimated efficiency and pedagogical effectiveness of other media in such a program would require an examination of the utility of these media in an experiment comparable to the present one.

G. Summary

The findings reported in this chapter suggest that the plan to encourage students to volunteer to conduct discussions on selected course lectures was accomplished successfully. New recruits volunteered every semester, and some of them stayed on in the program for succeeding semesters. The training procedures of the program were developed over several semesters but attained a form which operated to make most of the peer-leaders in the program reasonably competent discussion leaders. The peer-leaders showed a common identification, they consistently committed a number of hours a week to their duties, they developed a sense of the purpose of the program, and they were able to make discriminations between apathetic and responsive reactions of discussion group members to their leadership role. The accomplishment is remarkable since the role of peer-leader provided few tangible rewards to those who volunteered for it, and, as a role itself, it held no authority or control over students except demonstrated competency in guiding the discussion. The peer-leaders themselves were enthusiastic about the program and felt almost unanimously that it should be retained. They believed that it contributed to their own understanding of social science, provided them a new appreciation of what it meant to be a teacher and had value in giving practice in group leadership. They also felt that their role contributed to the learning of the other students in the course and to their interest in the course.

It is difficult to determine the extent to which this program was a positive instructional influence on the other students in the course. The basic goal of the short discussion sections, in encouraging students to respond through their own discussion to the stimuli presented in selected televised lectures, does not lend itself easily to measurements which do not also reflect the influence of other instructional features of the course. The desired type of discussion did occur in most of the discussion sections, at least some of the time, according to the observations of the program staff and to the testimony of the peer-leaders. The student approval of the short sessions increased progressively throughout the project until about half of the students favored their continuance. The majority of students indicated that they felt these discussions made the course more interesting, but they consistently rated it relatively low in contribution to their learning among all the instructional features of the course. At the same time, however, many students appeared to base their evaluation of the contribution of an instructional feature on its relevance to the course examinations. Other students appeared disposed against short discussion, because it was an instructional situation with which they had had little or no previous experience and one in which their performance was not being judged and graded. In general, these two influences appeared to be at work mainly among academically poorer students or students who had a low interest in social sciences. The students who responded most actively to the opportunity for peer-led discussion were those who were interested in the course subject matter and had a good comprehension of the materials presented in lectures and readings. These students constituted a large segment of the enrollment, and for them, it can be concluded, the peer-led program must have been a positive instructional experience.

These findings relative to the peer-leader training program indicate that undergraduates can be trained to lead short discussions on televised lectures, which apparently provide positive instructional experiences for other students in the course. These discussions can be conducted in many locations on the campus other than classrooms, and conditions other than the skill of the peer-leader appear to be an influence on the quality of the discussion. The videotaped lecture itself serves as a main, if not essential, element in the training program. Such a program operates to provide a ladder to or guide for an academic or a professional career for some students who participate in the program over several years. There are suggestions in these findings of tapping a reservoir of abilities in undergraduates, which may contribute to the learning of their peers in a situation where no other staff resources are available. Videotaped television and facilities for campus-wide transmission of taped lectures are basic technical ingredients for developing a program of this nature.

Finally, it appears that this program provided both a mass and individualized use of television for instructional purposes. The standard stimulus of a televised lecture was displayed for all students in the course, while a selected number of peer-leaders were trained by showing them the same lecture so that they could lead their fellow students in a discussion of it. As a consequence of the training program and of the student reaction to it in the short discussions, all students were given an instructional experience which otherwise would not have been available to them, and the peer-leaders were given a special experience which apparently contributed to their academic careers.

CHAPTER IV

Collection and Analysis of Data

The experiment was designed to yield information primarily on the following factors:

a. Comparison of effects of classroom or residence attendance. The principal criterion was student achievement, but student attitude toward various aspects of the course and toward television instruction were also of interest.

b. Effect of student-led discussion - both upon students led and upon the leaders who comprised between five and eight per cent of the class population.

The conditions under which the experiment had to be conducted imposed serious methodological problems. Voluntary association and participation were at the heart of the experiment. That is to say, students selected their place of viewing and elected whether or not to undergo training as discussion leaders. The experimenters were interested in determining effects in a wholly naturalistic setting, which permitted students to view and discuss in natural groups. Therefore, it would have been entirely inappropriate to assign students to treatments - by random selection or otherwise.

It was clear, however, that with students selecting their own treatments many sources of bias might influence the data. Consequently, although no complete solution to this problem was possible, an effort was made to control for probable sources of bias by subjecting the data to analysis of covariance, covarying simultaneously on several variables. Furthermore, in the interest of conservative interpretation, each semester was treated as a replication of the experiment, and differences are not considered significant unless they were found consistently.

The practical manipulation of the data required the application of computer techniques. The standard program for analysis of covariance was considerably extended and modified for the purposes of this project. This extension and modification is discussed more thoroughly later in the chapter.

Frequently, it was desirable to show a relationship between data which were non-continuous or which could be classified in a non-continuous manner. In these instances, chi square analysis was used. A useful and convenient chi square analysis print out was developed for the computer. This, too, is discussed later in the chapter.

There were frequent instances when simple distributions of response without further analysis were desired.

The data were collected from student records, from objective achievement tests, from questionnaires and from semantic differential schedules. Attendance data during one semester was secured through direct observation. Essentially the same data were collected each semester of the three years of the experiment, except for the first year when the data for both semesters were collapsed into a single analysis. Consequently, essentially the same questions were put to the data each semester, thus increasing the confidence which one may have in the generality of the results.

In addition, a "retrospective" study was conducted during the school year 1962-63 in which we put a series of evaluative questions to persons who had been students during 1960-61 and 1961-62. It was believed that the greater experience and maturity of these persons (not all were still students) would give them a valuable perspective on the questions which were being studied.

In several instances, students and faculty used data collected in the course of the study for theses or other purposes. Four such studies are reported in the appendices.

The nature and classification of the principal variables are given on the following page. It should be understood that the classifications as given are generally correct but that the control variables were sometimes used as criteria and that criterion variables were occasionally used as controls.

Criterion Variables
- Examinations
  - Mid-term Exams
  - Final Exams
- Student Attitudes - (toward aspects of the course; toward television)
  1. Prefer large classroom lecture or TV lecture for social science course
  2. What is your attitude toward the long TV lectures
  3. What is your attitude toward the short TV lectures
  4. What is your opinion of the training of the person who led the short discussion
  5. How would you compare Soc 105 to other courses you are taking
  6. From which aspect of the course do you think you learned most
  7. From which aspect of the course do you think you learned least
  8. Semantic differential - my guiding others
  9. Semantic differential - others guiding me
  10. How would you like instructors to lecture instead of having TV
  11. Prefer large class lecture or TV in small classroom for Soc
  12. Prefer large class lecture on TV in residence for Soc
  13. What do you think of TV as used in Sociology 105
  14. What do you think of TV in general

Experimental Variables
- Place of Viewing
  - Dormitory, Residence, Elsewhere
- Student Status
  - Discussion Leader - Student
  - (Peer) (Non-Peer)
- Time of Viewing

Control Variables
- Student Ability
  - SCAT I (Linguistic)
  - SCAT II (Quantitative)
  - High School percentile rank
  - Grade point average, previous semester
- Miscellaneous Student Characteristics
  - Sex
  - Year in school
  - Place of residence
- Student Motivation Indices
  1. How far do you expect to go in your college education
  2. How hard do you work on school work compared to others
  3. How important are good grades to you
- Attendance

The statistical methods employed in this study consisted chiefly of multiple regression, analysis of variance and analysis of covariance. Chi square was used but to a considerably lesser extent.

In some studies, it is possible to set up a particular experiment such that the most efficient tests may be employed and the estimation of parameters be independent of one another. This is generally the situation illustrated in textbooks on analysis of variance, where the number of subjects in each cross-classification is selected to yield what is called an orthogonal design. When this occurs, estimation and testing procedures are fairly straightforward. There are two obvious ways of obtaining orthogonal designs for analyses: (1) to place subjects in appropriate conditions of the experiment such that the desired design results and (2) to use many subjects and use the data only from those which will yield an orthogonal design. The first alternative may affect the outcome of the analyses if forcing a subject into a category has an effect on his behavior, which results in part because he was forced. The second alternative may have the effect of throwing away large amounts of data for the sake of ease in computation.

This project had to face both of the facts mentioned above. It did not seem that students could or should be forced into categories for the sake of design. For instance, it did not seem that a particular student should be told that he must watch the TV lectures in his dormitory when he would rather view them in a classroom or that he had to be a peer-leader regardless of his feelings in the matter. Consequently, the students were allowed to select their own experimental conditions. If enough subjects are available, the results of those students not fitting into an orthogonal design can be discarded. However, in these analyses, it was found that if a three or four-way analysis of variance was attempted using only students who fitted into an orthogonal design, only a very small fraction of the observations would be included in the analysis.

Thus, for this study, all analyses employed the non-orthogonal design for the analysis of variance portion of the various general linear models employed. The expression "the analysis of variance" portion is used since it is known[1] that analysis of variance can be treated as a regression model, and both analysis of variance variables and continuous variables may be put into the same equation and solved simultaneously to yield the classical analysis of covariance or the generalized linear model.

In general, analyses of variance may be one of two types: (1) fixed effects or (2) random effects models. These, of course, correspond to Eisenhart's types I and II respectively. For purposes of this experiment, the fixed effects model seemed appropriate since the experimental conditions were not a random sample from a population of conditions but, rather, a sample of the particular conditions studied.

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[1] Scheffé, H. The Analysis of Variance. New York: Wiley, 1959.

Consequently, all analyses in this report assume a fixed effects model and all significance testing has been done accordingly.

Though some analyses were done on the data during the first two years of the study, it was not until the last year, when the University of Illinois obtained an I.B.M. 7090 computer, that extensive analysis of the data was possible. In order to make use of the capabilities of the 7090, a special program had to be written which would handle the data. The full development of this program took approximately nine months. It was conceived from the beginning of the writing of the program that it should reduce data preparation to a minimum and should yield an output suitable directly for publication with all results fully labeled.

The resulting program is now called ARGLS V. It has been written in FORTRAN except for some twenty orders which were written in object language. Therefore, it may be made available to computer installations which have a FORTRAN translator. However, it has a high storage requirement and, therefore, may be used without modification only on machines which have a large memory capacity, as the I.B.M. 7090. ARGLS V employs a unique method for solving linear equations. This method is described in an article by Watson.[1]

A. Linear Models

ARGLS V will solve simultaneous linear equations employing up to 130 variables. Though this may generally be considered large for multiple regression problems, a relatively small analysis of variance problem may quickly overrun the capacity of the program, especially when all interaction terms are to be solved. For example, if a four way analysis of variance problem with four levels in each dimension is set up in equation form, 113 variables (or equations) are required to obtain a constant, the main effects and the first order interaction terms. This problem may be offset somewhat when only the reduced[2] equations are employed in ARGLS V so that larger problems may be solved. And though, indeed, the reduced equations are necessary to solve the original equations, it was believed desirable not to otherwise employ the storage locations used by the deleted variables in order to simplify programing at output time.

An example of the output of results from ARGLS V is given on pages 40 and 41. Here it will be noticed that not only is each variable given a number to identify it, but, optionally, the actual name may be printed - an option which was invariably used. Since a number of different problems involving the same variables may be solved in a single pass through the computer, each of the separate problems is designated

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[1] Watson, F. R., A new method for solving simultaneous linear equations associated with multivariate analysis, Psychometrika, 1964, 29, 75-86.

[2] Kempthorne, O., The Design and Analysis of Experiments. New York: Wiley, 1960.

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JOB  6  SOC 104-105, 1960-1961. DATA  6/7/63                                              RESULTS ARE IN   RAW  SCORES

                      CRITERION   15     VARIABLE NO.  13                 105 FINAL TOTAL

          SAMPLE SIZE =     96        PERCENT OF VARIANCE NOT ACCOUNTED FOR = 55.5517        DF =   83    ETA =  .6667

SAMPLE S.D. =  10.8263    POPULATION S.D. =  10.8831    CRITERION MEAN =   83.5000      MAX ERROR =  .85E-04  PCT

     ANOVA PREDICTOR       NO.   CLASS                             CRITERION     REGRESSION      S.D. OF          T RATIO
                                  SIZE                                MEAN          WEIGHT      REG WEIGHT

                 MEAN       1      96                              83.5000        74.0238       35.2695          2.3988

SEX
                 MALE      15      17                              87.4118          .4166        1.3996           .2976
               FEMALE      16      79                              82.6582         -.4166        1.3996           .2976

YEAR IN SCHOOL
             FRESHMAN      17      81                              82.6790        -2.2384        1.5150          1.4775
            SOPHOMORE      18      15                              87.9333         2.2384        1.5150          1.4775

LOCAL RESIDENCE
      U. OF I. HOUSING     23      57                              83.8246         1.9940        2.4250           .8223
   FRATERNITY/SORORITY     24      22                              83.3182        -3.5312        2.9471          1.1982
 ORGANIZED INDEPENDENT     25      14                              82.2143         -.8332        2.9845           .2792
NONORGANIZED INDEPENDENT   26       1                              77.0000         -.3062        7.2315           .3423
                 HOME      27       2                              88.5000         2.6766        5.6851           .4708

PLACE SHORT LECTURE VIEWED--105
                CLASS      32      38                              85.1316         1.2132        1.3276           .9138
                 DORM      33      40                              81.0500        -3.3582        1.4613          2.2981
             SORORITY      34      18                              85.5000         2.1450        1.7462          1.2284


       COVARIABLE          NO.    SIZE       R      SAMPLE SD       MEAN

                  AGE      14      96     .0167        .6059      17.0521        -1.1097        1.8886           .6300
       PRE-TEST SCORE      52      96     .4119       3.3349      15.3437          .6326         .3089          2.3473
   (LINGUISTIC)  SCAT I    54      96     .5858       8.6521      36.8750          .5670         .1332          4.2565
 (QUANTITATIVE)  SCAT II   55      96     .3621       8.5263      34.0104          .0605         .1217           .4971


               CONTRAST                       VARIABLE NOS.    DIFFERENCE     SD OF DIFF      T RATIO

               MALE -                 FEMALE   15 -  16           .8331        2.7993          .2976
                                                   -4.6534              6.3197

           FRESHMAN -              SOPHOMORE   17 -  18        -4.4768         3.0300         1.4775
                                                  -10.4155              1.4619

     U. OF I. HOUSING -      FRATERNITY/SORORITY   23 -  24         5.5292         2.6851         2.0577
                                                     .2624             10.7880                      SIGNIFICANT

     U. OF I. HOUSING -    ORGANIZED INDEPENDENT   23 -  25         2.8272         2.7691         1.0210
                                                   -2.6003              8.2547
```

```
    U. OF I. HOUSING - NONORGANIZED INDEPENDENT   23 -  26           2.3002            8.8533          .2598
                                                       -15.0524             19.6527

    U. OF I. HOUSING -                       HOME   23 -  27           -.6827            6.6507          .1026
                                                       -13.7181             12.3528

  FRATERNITY/SORORITY -    ORGANIZED INDEPENDENT   24 -  25          -2.6980            3.1621          .8532
                                                        -8.8957              3.4998

  FRATERNITY/SORORITY - NONORGANIZED INDEPENDENT   24 -  26          -3.2250            9.1616          .3520
                                                       -21.1817             14.7317

  FRATERNITY/SORORITY -                      HOME   24 -  27          -6.2078            7.0975          .8747
                                                       -20.1189              7.7032

ORGANIZED INDEPENDENT - NONORGANIZED INDEPENDENT   25 -  26           -.5271            9.1411          .0577
                                                       -18.4417             17.3896

ORGANIZED INDEPENDENT -                      HOME   25 -  27          -3.5099            7.1692          .4896
                                                       -17.5615             10.5417

NONORGANIZED INDEPENDENT -                   HOME   26 -  27          -2.9828           11.1215          .2682
                                                       -24.7809             18.8153

                CLASS -                      DORM   32 -  33           4.5713            2.1786         2.0983
                                                           .3012              8.8415                      SIGNIFICANT

                CLASS -                  SORORITY   32 -  34           -.9318            2.7364          .3405
                                                        -6.2952              4.4316

                 DORM -                  SORORITY   33 -  34          -5.5032            2.9337         1.8759
                                                       -11.2532               .2468


THE VALUES BELOW (DIFFERENCE) ARE THE LOWER AND UPPER 95  PERCENT CONFIDENCE LIMITS OF THE DIFFERENCE.
THE WORD (SIGNIFICANT) WILL APPEAR TO THE RIGHT IF THE DIFFERENCE IS SIGNIFICANT AT THE
  5  PERCENT LEVEL OF SIGNIFICANCE.
```

as a job. The first line on each output sheet first identifies which job the following results are for and prints out identification with optional identification immediately following the job number. When dealing with straight regression problems, one may wish the results to be either in raw score or standardized score terms. The right side of the first line indicates whether the results are in raw or scaled scores. Line two identifies the variable which is considered to be the criterion or dependent variable. The identification is made always with a number and optionally with an actual name.

Line three at the beginning of each output supplies the "sample size" of the number of subjects upon which the analysis is based, the per cent of variance of the criterion variable not accounted for by the predictor or independent variables, the degrees of freedom associated with the error term (residual sums of squares) correctly computed for all types of analyses and the Eta, which corresponds to the multiple R of the straight regression problems. Eta is computed as

$$\sqrt{1 - \frac{\%\text{ variance not accounted for}}{100}}$$

The estimates of the sample and population standard deviations for the criterion variable are given on line four along with its mean. The last term on line four refers to the maximum error occurring in a checking procedure used in the program. Thus a check is obtained in all computations.

The independent or predictor variables are classified as belonging to one of two classes. The first includes those which are multichotomous in character, referring to the different dimensions and levels of an ANOVA model. Here each level in each dimension is treated as a separate variable. Thus, these are labeled ANOVA PREDICTOR in the results sheet. The second type includes the continuous variables which would constitute the classical regression model if used by themselves and are labeled COVARIABLE in the results page. For convenience and with some logical justification, the mean or the constant term is put in the class of ANOVA PREDICTOR.

There are seven columns associated with the results portion of the ANOVA type variables. The first column consists of the names of the dimensions of the ANOVA design and the names of the levels within each dimension as subheadings. Since the dimensions themselves are not considered as variables *per se*, whereas the individual levels are variables, only lines begun with the names of levels have information to the right of the names. The second column identifies each variable by number as it is located in the computer. As seen from the example, not all variables in the machine need to be used for a particular problem. Therefore, the second column will not necessarily contain consecutive numbers.

The third column "CLASS SIZE" indicates the number of observations or subjects within each of the levels. Thus, since all observations are included in the class "Mean," its size is the same as the sample size. Within a single dimension, the sum of the sizes in the different levels is also the sample size, as may be verified.

Column four headed "CRITERION MEAN" indicates the mean of the dependent variable for each of the levels in each dimension of the ANOVA model. For example, the mean score on 105 Final Total for the males is 87.4118 and for the females is 82.6582. Thus, the various means for the different groups or classes are obtained.

For the ANOVA type variables, the meaning of a regression weight is the same as that of the value of an effect. These effects are to be found in column five under the heading "REGRESSION WEIGHT." Thus, for this problem the main effect for males is .4166 and the main effect for females is -.4166 as indicated. Since interaction terms are not solved, all regression weights for the ANOVA type variables are main effects. Column six gives the standard deviation of each main effect in the preceding column when the fixed effects model is employed. The ratio of a regression weight divided by its standard deviation is given in column seven.

Following the results of the ANOVA type variables are the results for the continuous type variables. These are labeled covariables as they are the covariates in analysis of covariance. As before, these variables may be referred to by names or numbers which are given in columns one and two. If the model being analyzed is one that assumes equal regression weights in all classes between a covariable and the criterion, the size for that covariable will be equal to the total sample size. In all cases "SIZE" refers to the number of observations upon which the remaining statistics for that variable are based.

Column four contains the Spearman product-moment correlation coefficients between each of the covariables listed and the criterion. Age, for instance, correlated .0167 with the 105 Final Total score. The mean and sample standard deviations of each of the covariables are to be found in columns six and five respectively. The standard deviation has been computed for the sample and not for the population in this case.

The regression weights associated with each covariable are to be found in column seven of the same section while, in the same manner as in the above section, columns eight and nine contain the standard error of the regression weights and the ratios of the regression weights to their standard errors.

The last section of the results of analysis is given on pages 40 and 41 under the title of "CONTRAST." For our investigation, only the differences between two main effects were considered, and only when the two levels associated with these effects were within the same dimension. Thus, only certain types of contrasts[1] were investigated out of the population of all possible contrasts.

---

[1] Ibid.

The first column, titled "CONTRAST" contains the names of the two levels for which the difference between effects is computed and indicates the deviation of the difference. For example, the first line "MALE-FEMALE" is to be read as "male effect minus female effect." Column two repeats the information in column one except that the variables are identified by number rather than by name. Column three on the same line gives the algebraic value of the difference thus computed, and columns four and five give the standard error of this difference and the ratio of the absolute value of the difference to its standard error, respectively. On each alternate line immediately following each of the above described lines, are given the upper and lower alpha per cent confidence limits for each of the computed contrasts (differences) on the preceding line.

The determination of alpha is dependent upon a parameter read into the program and the method used for testing significance. For example: let D be the difference between two effects, S the standard error of this difference and k the parameter used by the program. The upper and lower alpha confidence limits then, are computed as:

$$\text{upper limit} = D + kS$$
$$\text{lower limit} = D - kS$$

Now, if the significance of only a single contrast is to be determined, k corresponds to Student's "t" associated with the desired alpha level and the degrees of freedom given on line three, and does not neglect the factor of whether a one tail or two tail test is wanted. Now, if the difference is significantly different from zero at the alpha level of significance, the "T RATIO" will be greater than the chosen value of Student's "t" and zero will be outside the range defined by the upper and lower confidence limits. When this occurs the word "SIGNIFICANT" is printed in the right hand margin on the line containing the upper and lower limits, as may be seen in the third and twelfth contrasts.

In general, however, one may wish to determine the significance of several contrasts simultaneously at a particular alpha level. When this is desired, Student's "t" is of no help so that k must be determined in a different manner to obtain the particular alpha level. One may use for this the method described by Scheffé.[1] When this method for determining k is employed, one need not be concerned when the analysis of variance has a non-orthogonal design, as this fact has been accounted for in the derivation of k. Perhaps the only drawback of Scheffé's method is that the true alpha level is never known exactly. The assumed alpha, however, is a conservative estimate of the true alpha. For example, if one determines k such that the .05 level of significance will be obtained, one is guaranteed that the true alpha level of significance is .05 or less. This assures the experimenter then that the true level of significance of his tests is not greater than alpha.

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[1] Op. cit.

B. Chi Square

The information employed by ARGLS V in solving linear models is stored in the machine in such a way that much of the information needed for solving the two-way chi squares between the different levels of any two dimensions of the analysis of variance is readily available. Thus, a subroutine was written which would employ this information and compute all possible two-way chi squares values.

The output of this information is illustrated on page 47. As before, the first line is one containing identification of the data employed. The second line contains the name of the dimension for which each column represents a level. The names of the levels are printed between the columns of asterisks. In this example, the columns represent the three levels "class," "dorm" and "sorority" of the dimension "place short lecture viewed--105." The third line contains the name of the dimension for which each row represents a level. Here the dimension is "sex" and the levels are "male" and "female."

The marginal totals and percentages are displayed around the main table. For example, in this problem there are 17 males or 17.71 per cent and 38 persons who viewed in class or 39.58 per cent.

The degrees of freedom associated with each problem, along with the chi square value and the level of significance, are printed out after presentation of the chi square table. The method of computing chi square is not very sophisticated in that it takes no account of low frequency cells, and so in some cases the value of chi square is too high. The degrees of freedom, however, is always correct even though some levels may be empty. A table look-up and interpolation procedure is used to compute the level of significance.

Because of the many protestations in the literature against employing chi square when many of the expected cell frequencies are less than five, the exact probability for the contingency tables has been computed. The method is that described by R. A. Fisher[1] for 2X2 contingency tables except that it has been generalized to rXk tables.

This has become possible with the recent development of a computer program for exact probabilities. Publication of the method and the program will occur in the near future.

The exact probability for most contingency tables in Chapter V is given in parentheses below the level of significance derived by chi square estimation.

---

[1] Fisher, R. A., Statistical Methods for Research Workers (5th ed.), London: Oliver and Boyd, 1934.

Sometimes it is easier to discern relationships in such a two-way table if percentages are used in each cell such that the cells in each row or each column sum to 100 per cent. Both of these are displayed on each output of a chi square problem from ARGUS V. The first being such that each column sums to 100 per cent so that in this example it may be seen that of those who view in the classroom 28.95 per cent are male and 71.05 per cent are female.

Under the heading "per cent within rows" the table is such that each row sums to 100 per cent: again from this example it may be seen that of all the males, 64.71 per cent view the short lecture in class and 35.29 view the short lecture in dorms.

All rows and columns may be interpreted in a similar manner.

```
SOC 104-105, 1960-1961, DATA  6/7/63
                                        PLACE SHORT LECTURE [illegible]

    SEX                                  *     *     *     *
                                         *     *     *     *
                                         *     *     *   [illegible]*
                     PERCENT  TOTAL      * [illegible]* [illegible]*

             MALE     17.71    17           11     6     0

           FEMALE     82.29    79           27    34    18

            TOTAL              96           38    40    18

          PERCENT                        39.58 41.67 18.75


  DEGREES OF FREEDOM =   2              CHI SQUARE =     7.84                LEVEL OF SIGNIFICANCE =  .020


PERCENT WITHIN COLUMNS

             MALE                        28.95 15.00   .00
           FEMALE                        71.05 85.00 100.00


PERCENT WITHIN ROWS

             MALE                        64.71 35.29   .00
           FEMALE                        34.18 43.04 22.78
```

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CHAPTER V

Results

A. Characteristics of the Population

Machine analysis of the data required that for a student's responses to be calculated in the results, it was necessary for all of his data to be available. Consequently, there was substantial attrition in the "n" due to missing data. Most missing data was usually attributable to missing SCAT scores (which were not available for transfer students), missing final examinations (because of conflict and make-up examinations), and missing questionnaires.

Table 8

Actual Course Enrollment and Usable Experimental Population

	Course Enrollment	Experimental Population
Fall 1960	450	*
Spring 1961	435	96*
Fall 1961	428	235
Spring 1962	393	160
Fall 1962	430	254
Spring 1963	404	226

* In 1960-61, the first year of the experiment, only students for whom all data were available during both semesters were used in the analysis.

Unless otherwise stated all subsequent analyses are based on the "n" given for the experimental population.

The following Tables 9 to 18 give additional information about the experimental population.

2

Table 9

Per Cent Enrollment By College for Experimental Subjects and For All University Freshmen and Sophomores

	Fall 1960			Fall 1961			Fall 1962		
College	All F-S	Female F-S	Sample	All F-S	Female F-S	Sample	All F-S	Female F-S	Sample
Agriculture	8	7	0	7	7	1	7	7	1
Commerce	13	6	3	12	6	4	11	5	4
Education	8	23	53	8	21	52	7	17	50
Engineering	20	0	1	18	1	1	17	1	1
Fine and Applied Arts	8	8	3	9	8	3	8	8	4
Liberal Arts and Sciences	39	52	39	42	55	39	46	59	39
Physical Education	3	4	1	3	3	0	3	3	1
Others	1	0	0	1	0	0	1	0	0

Table 10

Scores of Experimental Subjects and of All Entering University Students on the School and College Ability Test (SCAT)

	Soc 104-105 Sample	Entering Male Students	Entering Female Students
Fall 1960	70.9*	78.3	76.8
Fall 1962	72.9*	79.6	78.6

* Table 10 shows that academic aptitude (as measured by SCAT) for the Sociology 104-105 students is significantly lower than that of entering students generally.

Table 11

Grade Point Average of Experimental Subjects and All Freshmen Students in 1962

Soc 104-105 Sample	Male Freshmen	Female Freshmen
3.39*	3.14	3.27

*significantly higher than grade point average of freshmen at .05 level

Table 12

Sex and Place of Residence

1960-61	%	N	Dorm	Frat/Sor	Indep	Home	Other
Male	17.71	17	11	3	1	2	0
Female	82.29	79	46	19	14	0	0
Total		96	57	22	15	2	0
Per cent			59.37	22.92	15.58	2.08	
D.F. = 4			Chi Square = 10.93		Significance = .030 (.052)[1]		
Fall 1961							
Male	10.21	24	6	8	8	1	1
Female	89.79	211	125	49	27	10	0
Total		235	131	57	35	11	1
Per cent			55.74	24.26	14.89	4.68	.43
D.F. = 4			Chi Square = 20.35		Significance = .001 (.001)		
Fall 1962							
Male	12.99	33	12	12	7	2	0
Female	87.01	221	122	66	21	10	2
Total		254	134	78	28	12	2
Per cent			52.76	30.71	11.02	4.72	.79
D.F. = 4			Chi Square = 6.34		Significance = .180 (.154)		

It will be seen in Table 12 that the great preponderance of subjects were female; more than half of the students lived in dormitories and about one-fourth lived in fraternities or sororities. Women were more likely than men to live in residence halls instead of fraternities (sororities) or independent housing.

---

[1] The figure in parentheses is the exact probability as discussed in Chapter IV. This notation is used throughout the chi square tables.

Table 13

Sex and Grade Point Average for Courses Last Semester

Spring 1962	%	N	<2.0	2.0- 2.5	2.5- 3.0	3.0- 3.5	3.5- 4.0	4.0- 4.5	>4.5
Male	15.00	24	11	4	6	5	3	4	1
Female	85.00	136	0	3	30	31	43	22	7
Total		160	1	7	36	36	46	26	8
Per cent			.62	4.37	22.50	22.50	28.75	16.25	5.00
D.F. = 6		Chi Square = 18.17				Significance = .008[1]			
Spring 1963									
Male	11.95	27	0	0	7	10	5	3	2
Female	88.05	199	0	6	30	78	46	29	10
Total		226	0	6	37	88	51	32	12
Per cent			.00	2.65	16.37	38.94	22.57	14.16	5.31
D.F. = 5		Chi Square = 3.23				Significance = .666			

There was no consistent significant interaction between sex and grade point average for the previous semester.[2]

---

[1] Exact probabilities were computed for over seventy per cent of all the chi square tables reported. In view of the fact that among these only four showed an appreciable difference between the exact probability and the probability computed by chi square, the remaining exact probabilities were not computed because they would have required an inordinate amount of computer time.

[2] In view of the fact that hundreds of tests of significance were made during the course of this study - and, therefore, an undetermined number of differences would be "significant" by chance alone - it has seemed best not to consider differences significant unless they were consistently so. Also, two-tailed tests of significance are employed throughout.

Table 14

Sex and Expectation of Amount of Higher Education

Fall 1961	%	N	Freshman	Sophomore	Junior	Senior	Graduate
Male	10.21	24	0	1	0	4	19
Female	89.79	211	1	8	6	154	42
Total		235	1	9	6	158	61
Per cent			.43	3.83	2.55	67.23	25.96
D.F. = 4			Chi Square = 40.12		Significance = .001 (.00001)		
Spring 1962							
Male	15.00	24	0	0	0	8	16
Female	85.00	136	1	2	0	106	27
Total		160	1	2	0	114	43
Per cent			.62	1.25	.00	71.25	26.87
D.F. = 3			Chi Square = 22.86		Significance = .001 (.00008)		
Fall 1962							
Male	12.99	33	0	0	0	15	18
Female	87.01	221	0	3	3	178	37
Total		254	0	3	3	193	55
Per cent			.00	1.18	1.18	75.98	21.65
D.F. = 3			Chi Square = 24.50		Significance = .001 (.0004)		
Spring 1963							
Male	11.95	27	0	0	0	10	17
Female	88.05	199	3	0	1	158	37
Total		226	3	0	1	168	54
Per cent			1.33	.00	.44	74.34	23.89
D.F. = 3			Chi Square = 25.87		Significance = .001 (.0003)		

It will be seen that there are very few students who do not expect to graduate and that there is a consistent, significant interaction with sex occasioned by the greater proportion of men who plan to go to graduate school.

Table 15

Sex and Religious Preference

Spring 1962	%	N	Protestant	Catholic	Jewish	Other	None
Male	15.00	24	13	3	5	1	2
Female	85.00	136	54	15	65	0	2
Total		160	67	18	70	1	4
Per cent			41.87	11.25	43.75	.62	2.50

D.F. = 4 Chi Square = 13.96 Significance = .008 (.01)

Spring 1963							
Male	11.95	27	13	5	5	0	4
Female	88.05	199	72	17	103	2	5
Total		226	85	22	108	2	9
Per cent			37.61	9.73	47.79	.88	3.98

D.F. = 4 Chi Square = 18.14 Significance = .002 (.005)

There was a significant interaction between sex and religious preference. This may be due to a disproportionately higher number of Jewish females, but the low "n" in some cells makes this interpretation quite tentative.

Table 16

Sex and Availability of TV in Residences

1960-61	%	N	Yes, TV Set	No, TV Set	?, TV Set
Male	17.71	17	3	13	1
Female	82.29	79	64	13	2
Total		96	67	26	3
Per cent			69.79	27.08	3.12
D.F. = 2			Chi Square = 27.16		Significance = .001 (.000002)
Fall 1961					
Male	10.21	24	16	8	
Female	89.79	211	197	14	
Total		235	213	22	
Per cent			90.64	9.36	
D.F. = 1			Chi Square = 18.10		Significance = .001 (.0004)
Fall 1962					
Male	12.99	33	20	13	
Female	87.01	221	189	32	
Total		254	209	45	
Per cent			82.28	17.72	
D.F. = 1			Chi Square = 12.23		Significance = .001 (.001)

It will be seen that a preponderence of students had access to a television receiver in their residences but that there was a significant interaction between sex and access to television, with women more likely than men to have TV available. As a consequence of this, relatively little viewing in residences was done by men.

Table 17

Class and Place of Residence

1960-61	%	N	Dorm	Frat/Sor	Indep	Home	Other
Freshman	84.37	81	52	15	12	2	0
Sophomore	15.62	15	5	7	3	0	0
Junior	.00	0	0	0	0	0	0
Senior	.00	0	0	0	0	0	0
Total		96	57	22	15	2	0
Per cent			59.37	22.92	15.62	2.08	.00
D.F. = 3			Chi Square = 6.99		Significance = .076 (.06)		
Fall 1961							
Freshman	74.89	176	105	33	27	10	1
Sophomore	24.68	58	26	23	8	1	0
Junior	.43	1	0	1	0	0	0
Senior	.00	0	0	0	0	0	0
Total		235	131	57	35	11	1
Per cent			55.74	24.26	14.89	4.68	.43
D.F. = 8			Chi Square = 14.58		Significance = .072 (.067)		
Fall 1962							
Freshman	69.29	176	101	49	17	8	1
Sophomore	25.98	66	30	21	10	4	1
Junior	3.15	8	2	6	0	0	0
Senior	1.57	4	1	2	1	0	0
Total		254	134	78	28	12	2
Per cent			52.76	30.71	11.02	4.72	.79
D.F. = 12			Chi Square = 13.61		Significance = .330		

It will be seen that the majority of students were freshmen and that the combination of freshmen and sophomores accounted for more than 95% of the total. There was no consistent significant interaction between class and place of residence.

Table 18

Class and Grade Point Average for Last Semester

Spring 1962	%	N	<2.0	2.0-2.5	2.5-3.0	3.0-3.5	3.5-4.0	4.0-4.5	>4.5
Freshman	71.25	114	1	6	32	27	26	17	5
Sophomore	26.87	43	0	1	3	9	19	8	3
Junior	1.87	3	0	0	1	0	1	1	0
Senior	.00	0	0	0	0	0	0	0	0
Total		160	1	7	36	36	46	26	8
Per cent			.62	4.37	22.50	22.50	28.75	16.25	5.00

D.F. = 12 Chi Square = 14.65 Significance = .260

Spring 1963									
Freshman	60.62	137	0	6	30	64	22	11	4
Sophomore	33.63	76	0	0	7	21	24	17	7
Junior	4.87	11	0	0	0	2	4	4	1
Senior	.88	2	0	0	0	1	1	0	0
Total		226	0	6	37	88	51	32	12
Per cent			.00	2.65	16.37	38.94	22.57	14.16	5.31

D.F. = 15 Chi Square = 39.19 Significance = .001

There was no consistent interaction between class and grade point average for the previous semester.

B. Place and Time of Viewing

During the first two years of the experiment, classes were televised at 8 a.m. and 1 p.m., that is to say during the first hour of the morning and afternoon when students might reasonably be expected to be at their residence rather than on campus. (It should be noted that the campus of the University of Illinois is an extensive one so that distances between residences and classroom buildings are likely to be substantial). In the third year, the one o'clock class was retained but the eight o'clock class was moved to ten o'clock, that is to a time when students were less likely to be in residences and more likely to be on campus for classes in the adjacent hours.

Attendance at the 50 minute TV lectures during those years was found to be as indicated in Table 19.

Table 19

Place of Attendance at Fifty-Minute Lecture (In Per Cent)

	Classroom	Residence	Elsewhere
Spring 1961	32	65	3
Fall 1961	33	63	4
Spring 1962	31	66	3
Fall 1962	50	48	2
Spring 1963	49	49	2

It will be seen that in the first three semesters listed approximately two-thirds of the students consistently viewed in their residences or other non-classroom locations. However, in the final year 1962-63, when the morning class was moved to ten o'clock, the attendance pattern changed and approximately fifty per cent of the students elected to view in classrooms.

The effect of this change can be seen better in the following tables.

Table 20

Per Cent of Students Viewing in Different Places at Different Hours

Fall 1962	10 A. M.	1 P. M.	Total
Class	52	47	50
Residence	45	53	48
Elsewhere	3		2
Spring 1963			
Class	56	40	49
Residence	42	58	49
Elsewhere	2	2	2

Table 20 shows that in mid-morning a small majority of students viewed in classrooms while at the first hour of the afternoon a small majority viewed in residences.

Table 21

Per Cent of Students Viewing at Different Hours

	A. M.	P. M.
Fall 1960	48	52
Spring 1961	44	56
Fall 1962	60	40
Spring 1963	56	44

Table 21 shows that there was a noticeable increase in enrollment in the morning class when it was moved to mid-morning.

From the foregoing it may be inferred that classes during the first hour of the day were attended in the residences by at least two-thirds of the students who attended that hour, and after the first hour there was a shift in preference toward the classroom, with the distribution between classroom and residence viewing being approximately equal.

Let us now look at some of the interrelationships which existed between place of viewing and other key variables.

Table 22

Sex and Place of Viewing

1960-61	%	N	Classroom	Residence	Elsewhere
Male	17.71	17	11	6	0
Female	82.29	79	27	52	0
Total		96	38	58	0
Per cent			39.58	60.42	.00
D.F. = 1		Chi Square = 10.01		Significance = .003 (.007)	
Fall 1961					
Male	10.21	24	16	6	2
Female	89.79	211	64	137	10
Total		235	80	143	12
Per cent			34.04	60.85	5.11
D.F. = 2		Chi Square = 14.55		Significance = .001 (.002)	
Spring 1962					
Male	15.00	24	12	11	1
Female	85.00	136	26	106	4
Total		160	38	117	5
Per cent			23.75	73.12	3.12
D.F. = 2		Chi Square = 11.17		Significance = .001 (.004)	
Fall 1962					
Male	12.99	33	21	9	3
Female	87.01	221	107	108	6
Total		254	128	117	9
Per cent			50.39	46.06	3.54
D.F. = 2		Chi Square = 7.52		Significance = .025 (.031)	
Spring 1963					
Male	11.95	27	17	10	0
Female	88.05	199	79	120	0
Total		226	96	130	0
Per cent			42.48	57.52	.00
D.F. = 1		Chi Square = 5.27		Significance = .023 (.024)	

It will be observed that females were significantly more likely than males to view in residence halls. It should be recalled from Table 16 that women were more likely than men to have access to TV receivers in their residences.

Table 23

Local Residence and Place of Viewing

1960-61	%	N	Classroom	Residence	Elsewhere
U. of I. Housing	59.37	57	20	37	
Fraternity/Sorority	22.92	22	11	11	
Organized Indep.	14.58	14	6	8	
Nonorganized Indep.	1.04	1	0	1	
Home	2.08	2	1	1	
Apartment, Etc.	.00	0	0	0	
Total		96	38	58	
Per cent			39.58	60.42	

D.F. = 4 Chi Square = 2.29 Significance = .670 (.769)

Fall 1961	%	N	Classroom	Residence	Elsewhere
Dormitory	55.74	131	43	85	3
Fraternity/Sorority	24.26	57	14	38	5
Independent	14.89	35	16	18	1
Home	4.68	11	6	2	3
Other	.43	1	1	0	0
Total		235	80	143	12
Per cent			34.04	60.85	5.11

D.F. = 8 Chi Square = 25.19 Significance = .002

Fall 1962	%	N	Classroom	Residence	Elsewhere
Dormitory	52.76	134	73	57	4
Fraternity/Sorority	30.71	78	32	45	1
Independent	11.02	28	14	13	1
Home	4.72	12	7	2	3
Other	.79	2	2	0	0
Total		254	128	117	9
Per cent			50.39	46.06	3.54

D.F. = 8 Chi Square = 25.66 Significance = .002

It will be seen that in two of the three years there is a significant interaction between the place that students live and the place they view. Of greatest interest is the fact that those who live in fraternities and sororities are somewhat more likely than those living in dormitories to view in their residences.

Table 24

Class and Place of Viewing

1960-61	%	N	Classroom	Residence	Elsewhere
Freshman	84.37	81	30	51	
Sophomore	15.62	15	8	7	
Junior	.00	0	0	0	
Senior	.00	0	0	0	
Total		96	38	58	
Per cent			39.58	60.42	
D.F. = 1			Chi Square = 1.41		Significance = .240 (.262)
Fall 1961					
Freshman	74.89	176	67	98	11
Sophomore	24.68	58	12	45	1
Junior	.43	1	1	0	0
Senior	.00	0	0	0	0
Total		235	80	143	12
Per cent			34.04	60.85	5.11
D.F. = 4			Chi Square = 11.01		Significance = .029 (.058)
Spring 1962					
Freshman	71.25	114	30	79	5
Sophomore	26.87	43	7	36	0
Junior	1.87	3	1	2	0
Senior	.00	0	0	0	0
Total		160	38	117	5
Per cent			23.75	73.12	3.12
D.F. = 4			Chi Square = 4.37		Significance = .360 (.298)
Fall 1962					
Freshman	69.29	176	98	72	6
Sophomore	25.98	66	25	38	3
Junior	3.15	8	4	4	0
Senior	1.57	4	1	3	0
Total		254	128	117	9
Per cent			50.39	46.06	3.54
D.F. = 6			Chi Square = 7.83		Significance = .255 (.250)
Spring 1963					
Freshman	60.62	137	63	74	0
Sophomore	33.63	76	31	45	0
Junior	4.87	11	2	9	0
Senior	.88	2	0	2	0
Total		226	96	130	0
Per cent			42.48	57.52	.00
D.F. = 3			Chi Square = 4.91		Significance = .183 (.167)

There was no consistent significant relationship between class and place of viewing.

Table 25

Place of Viewing and Expectations Regarding Level of Education to be Attained

Fall 1961	%	N	Freshman	Sophomore	Junior	Senior	Graduate
Classroom	34.04	80	0	2	3	47	28
Residence	60.85	143	1	7	3	103	29
Elsewhere	5.11	12	0	0	0	8	4
Total		235	1	9	6	158	61
Per cent			.43	3.83	2.55	67.23	25.96
D.F. = 8			Chi Square = 8.66		Significance = .379		
Spring 1962							
Classroom	23.75	38	0	0	0	24	14
Residence	73.12	117	1	1	0	87	28
Elsewhere	3.12	5	0	1	0	3	1
Total		160	1	2	0	114	43
Per cent			.62	1.25	.00	71.25	26.87
D.F. = 6			Chi Square = 17.52		Significance = .008 (.064)		
Fall 1962							
Classroom	50.39	128	0	0	2	92	34
Residence	46.06	117	0	2	0	97	18
Elsewhere	3.54	9	0	1	1	4	3
Total		254	0	3	3	193	55
Per cent			.00	1.18	1.18	75.98	21.65
D.F. = 6			Chi Square = 24.67		Significance = .001 (.007)		
Spring 1963							
Classroom	42.48	96	2	0	0	63	31
Residence	57.52	130	1	0	1	105	23
Elsewhere	.00	0	0	0	0	0	0
Total		226	3	0	1	168	54
Per cent			1.33	.00	.44	74.34	23.89
D.F. = 3			Chi Square = 8.09		Significance = .046 (.018)		

Three of the four semesters yielded a significant interaction indicating that those who viewed in residences were less likely than those who viewed in classrooms to expect to do graduate study. This might suggest a difference in academic motivation between these two groups. However, it will be remembered that women viewed in residences more than men and that women were less likely than men to expect to go to graduate school. Therefore, the effect of place of viewing and sex was partialed out by analysis of covariance. The result will be seen in Table 26.

Table 26

Place of Viewing and Expectations Regarding
Level of Education to be Attained
(With Sex and Residence Held Constant)

			Regression Weight			"t" Value of Difference		
Year	Mean	e.d.f.	Classroom	Residence	Elsewhere	C-R	C-E	R-E
Fall 1961	4.17	360	-.01	-.05	.06	.52	.44	.68
Fall 1962	4.14	351	.01	-.02	.01	.45	.01	.18

It will be seen in Table 26 that when sex and residence were held constant, differences in expectations regarding level of education to be attained among students who viewed at different locations virtually vanished. Therefore, the differences reported in Table 25 are most probably an artifact of sex and place of residence.

Table 27

Previous Experience with Instructional Television and Place of Viewing

1960-61	%	N	Classroom	Residence	Elsewhere
Yes	.00	0	0	0	
No	100.00	96	38	58	
Total		96	38	58	
Per cent			39.58	60.42	
D.F. = 0		Chi Square = .00		Significance = .990	
Spring 1962					
Yes	10.64	25	5	20	0
No	89.36	210	75	123	12
Total		235	80	143	12
Per cent			34.04	60.85	5.11
D.F. = 2		Chi Square = 4.73		Significance = .095 (.095)	
Fall 1962					
Yes	9.45	24	7	17	0
No	90.55	230	121	100	9
Total		254	128	117	9
Per cent			50.39	46.06	3.54
D.F. = 2		Chi Square = 6.84		Significance = .036 (.041)	
Spring 1963					
Yes	21.68	49	22	27	0
No	78.32	177	74	103	0
Total		226	96	130	0
Per cent			42.48	57.52	.00
D.F. = 1		Chi Square = .15		Significance = .699 (.745)	

There was no significant consistent relationship between whether students had had instructional television in previous semesters and their present place of viewing.

Table 28

Place of Viewing and Frequency of Changing Time or Place of Viewing*

	%	N	No Changes	1 Change	2 or 3 Changes	4 or More Changes
Classroom	47.45	93	59	24	8	2
Residence	52.55	103	67	21	11	4
Elsewhere	.00	0	0	0	0	0
Total		196	126	45	19	6
Per cent			64.29	22.96	9.69	3.06

D.F = 3 Chi Square = 1.34 Significance = .720 (.728)

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* Based on observation of a sample of nine lectures.

There was no significant relationship between place of viewing and frequency of change in time or place of viewing.

Table 29

Place of Viewing and Perceived Attitudes of Instructors

Fall 1961	%	N	Very Unfriendly	Rather Unfriendly	Neither Friendly Nor Unfriendly	Rather Friendly	Very Friendly
Classroom	34.04	80	0	0	18	54	8
Residence	60.85	143	0	3	40	88	12
Elsewhere	5.11	12	0	0	3	9	0
Total		235	0	3	61	151	20
Per cent			.00	1.28	25.96	64.26	8.51

D.F. = 6 Chi Square = 4.27 Significance = .642

Spring 1962							
Classroom	23.75	38	0	0	7	20	11
Residence	73.12	117	0	2	27	73	15
Elsewhere	3.12	5	0	0	0	4	1
Total		160	0	2	34	97	27
Per cent			.00	1.25	21.25	60.62	16.87

D.F. = 6 Chi Square = 7.35 Significance = .290

Fall 1962							
Classroom	50.39	128	0	4	48	71	5
Residence	46.06	117	1	1	32	74	9
Elsewhere	3.54	9	0	0	1	8	0
Total		254	1	5	81	153	14
Per cent			.39	1.97	31.89	60.24	5.51

D.F. = 8 Chi Square = 10.18 Significance = .256

Spring 1963							
Classroom	42.48	96	1	2	26	56	11
Residence	57.52	130	3	4	33	76	14
Elsewhere	.00	0	0	0	0	0	0
Total		226	4	6	59	132	25
Per cent			1.77	2.65	26.11	58.41	11.06

D.F. = 4 Chi Square = .79 Significance = .939

There was no significant relationship between where students viewed and what they perceived the attitudes of their instructors to be.

Table 30

Place of Viewing and Received Grade Point Averages

Spring 1962	%	N	<2.0	2.0-2.5	2.5-3.0	3.0-3.5	3.5-4.0	4.0-4.5	>4.5
Classroom	23.75	38	0	2	7	9	11	8	1
Residence	73.12	117	1	5	29	26	34	16	6
Elsewhere	3.12	5	0	0	0	1	1	2	1
Total		160	1	7	36	36	46	26	8
Per cent			.62	4.37	22.50	22.50	28.75	16.25	5.00

D.F. = 12 Chi Square = 7.95 Significance = .788

Spring 1963									
Classroom	42.48	96	0	1	17	40	22	11	5
Residence	57.52	130	0	5	20	48	29	21	7
Elsewhere	.00	0	0	0	0	0	0	0	0
Total		226	0	6	37	88	51	32	12
Per cent			.00	2.65	16.37	38.94	22.57	14.16	5.31

D.F. = 5 Chi Square = 3.01 Significance = .699

There was no consistent significant relationship between the place students selected to view and their grade point average for all courses in the previous semester. This finding, consistent with data to be presented later, indicates that there is no significant difference in academic achievement between students who view in classrooms, residences, and elsewhere.

Additional chi square analyses were made with respect to place of viewing as related to various other factors.

Table 31

Other Significant Interactions with Place of Viewing

Where do you normally watch the hour long TV lecture?	Chi Square	Level of Significance
1. What do you think of the idea of ITV in general?	11.18	.011
2. Prefer large class lecture or TV in residence?	23.83	.001
3. Do you think ITV should be used in Sociology?	7.39	.027
4. How hard do you work on school work compared to others?	7.80	.050

In general, those who viewed in residences were more favorable toward TV than those who viewed in classrooms. Those viewing in classrooms believed that they worked harder than those who viewed in residences.

The following chi square comparisons were also made but no significant differences were found.

Table 32

Other Non-Significant Interactions with Place of Viewing

Where do you normally watch the hour long TV lecture?
1. How would you like the quiz instructor to lecture instead of having TV?
2. How important are good grades to you?
3. How far do you think you will go in school?
4. Have you had ITV before?
5. Prefer large class lecture or TV in small classroom for Sociology?
6. What do you think of ITV as used in Sociology?
7. From which aspect of the course do you feel you learned least?
8. From which aspect of the course do you feel you learned most?
9. How would you compare Sociology 105 with other courses you are taking?

C. Student Achievement

Among the principal measures used repeatedly throughout the experiment were tests of academic achievement in the course. Tests were given at the mid-term and at the end of the course. Each had two parts and a total score. Part 1 consisted of multiple-choice items drawn from the readings and the supporting television lectures. In general, these items came from a pool that had been developed in the Department of Sociology during the years prior to the experiment and had been shown by item analysis to be stable and relevant measures. Part 2 consisted of items drawn only from the television lectures and not duplicated in the readings. It was the intention that Part 2 items would yield a measure related to television without contamination by other likely sources of information. However, considerable difficulty was experienced in writing items which were both drawn from the lectures only and covered significant content. The reason for this is that the really significant content which it was appropriate to include in the lecture portions of the course was usually also found in the text. Consequently, Part 2 - although modified each year with the hope of improving reliability - in each instance had only a relatively few items and, as it will be seen on the following page, had very low reliability.

Table 33

The Achievement Tests

	Tests	No. of Items	Mean	S.D.	N	Coefficient of Reliability
Fall 1960	Mid-term					
	Part 1	32	23.84	3.52	96	.53*
	Part 2	15	10.09	1.92	96	.11*
	Total	62	43.99	5.67	96	.61*
	Final					
	Part 1	62	44.99	5.53	96	.61*
	Part 2	22	16.71	2.26	96	.22*
	Total	109	81.84	9.76	96	.79*
Spring 1961	Mid-term					
	Total	59	44.36	5.31	96	.62*
	Final					
	Part 1	94	67.22	9.20	96	.86
	Part 2	24	16.28	2.93	96	.51
	Total	118	83.50	10.83	96	.85
Fall 1961	Mid-term					
	Part 1	40	30.88	4.08	96	.71
	Part 2	13	9.60	1.60	235	.43
	Total	53	40.48	4.99	235	.75
	Final					
	Part 1	86	58.58	9.06	235	.84
	Part 2	17	11.95	2.09	235	.39
	Total	131	90.44	12.17	235	.88
Spring 1962	Mid-term					
	Part 1	42	31.89	3.89	160	.66
	Part 2	14	10.51	1.80	160	.37
	Total	56	42.41	4.88	160	.72
	Final					
	Part 1	88	59.62	7.56	160	.78
	Part 2	27	21.24	2.82	160	.63
	Total	115	80.86	9.49	160	.83
Fall 1962	Mid-term					
	Part 1	42	31.86	4.24	254	.65
	Part 2	11	7.69	1.54	254	.27
	Total	53	39.55	4.97	254	.68
	Final					
	Part 1	80	57.07	8.01	254	.75*
	Part 2	25	15.31	3.19	254	.43*
	Total	133	93.26	11.88	254	.81*
Spring 1963	Mid-term					
	Part 1	48	34.61	4.79	226	.59*
	Part 2	12	8.28	1.67	226	.09*
	Total	60	42.89	5.62	226	.62*
	Final					
	Part 1	89	61.57	8.44	226	.74*
	Part 2	31	22.61	3.48	226	.51*
	Total	120	84.04	10.85	226	.79*

On the previous page, those coefficients of reliability marked with an asterisk were computed by Kuder-Richardson Formula # 23. All other computations used Kuder-Richardson Formula # 14. In general, Kuder-Richardson Formula # 14 yields coefficients which are somewhat higher and more accurate than Kuder-Richardson # 23.

As the table shows, the reliability of tests derived from the television lectures (Part 2) is generally too low to be useful. However, reliability based upon the total of the two parts is quite adequate. Therefore, unless otherwise noted, analysis of the achievement test data will be based on the total score, rather than upon part scores.

An analysis of covariance was performed on mid-term and final examinations, holding constant a number of factors which appeared to be relevant. In the year 1960-61, the control variables were sex, year in school, local residence, age, pre-test scores, SCAT I and SCAT II. The School and College Ability Test (SCAT) is administered to entering freshmen to obtain a measure of academic aptitude. Part I yields a measure of linguistic facility; Part II measures quantitative aptitude.[1] In 1961-62 and 1962-63, the covariables were: Student status (peer - non-peer), local residence, TV set in residence, place of viewing, pre-test, high school rank, semester hours carried, SCAT I and SCAT II. In Sociology 105 of 1962-63, local residence, TV set in residence, and the pre-test scores were dropped as covariables, and religious preference was added.

In 1961-62, the means were tested as between those who viewed in classrooms, dormitories, or sororities; in 1961-62 and 1962-63 the test was between those viewing in class, residence or elsewhere. In the Spring 1963, only classroom versus residence viewing was tested.

The results are given in Table 34. The table shows the means, error degrees of freedom, regression weight of the mean of each contrast made and "t" values of each contrast group comparison.

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[1] The multiple correlations between final exam total and SCAT-linguistic, SCAT-quantitative, number of credit hours carried and high school rank ranged from .36 to .41 over the three years of the experiment. It is assumed that this relationship represents students' attributes, the influence of which was independent of the experimental conditions.

Table 34

Effect of Place of Viewing on Achievement

				Place of Viewing (Regression Weight)			"t" Value of Differences		
Year	Test	Mean	e.d.f.[1]	Class	Dorm	Sorority	C-D	C-S	D-S
1960	104 M-term	43.99	83	-0.16	-1.23	1.39	0.81	0.94	1.49
	104 Final	81.84	83	0.28	-2.76	2.48	1.49	0.86	1.90
1961	105 M-term	44.36	83	0.65	-1.47	0.83	1.91	0.13	1.54
	105 Final	83.5	83	1.21	-3.56	2.15	2.10*	0.34	1.88
				Class	Residence	Elsewhere	C-R	C-E	R-E
1961	104 M-term	40.48	221	-0.31	0.14	0.17	0.68	0.35	0.02
	104 Final	90.44	221	-1.63	-1.14	2.77	0.32	1.33	1.20
1962	105 M-term	42.41	147	0.17	-0.09	-0.08	0.28	0.11	0.00
	105 Final	80.86	147	-1.12	-1.67	2.79	0.32	0.93	1.11
1962	104 M-term	39.55	240	-0.68	-0.56	1.24	0.20	1.23	1.11
	104 Final	93.26	240	0.44	-1.67	1.28	1.40	0.21	0.75
1963	105 M-term	42.89	214	0.51	-0.51	-----	1.46	----	----
	105 Final	84.04	214	0.90	-0.90	-----	1.39	----	----

*Significant at the 5% level.

It will be seen in Table 34 that only one comparison of academic achievement in relation to place of viewing yielded a significant difference. That was in 1961 when those viewing in classrooms achieved significantly more than those viewing in dormitories.

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[1] The abbreviation "e.d.f." stands for error degrees of freedom, or the degrees of freedom associated with the residual variance.

Comparisons were made to contrast differences in student aptitude or inferred motivation as these were related to place of viewing. Table 35 shows the result of an analysis of variance contrasting mean SCAT scores of students who viewed in different places.

Table 35

Relationship of Place of Viewing to Academic Aptitude as Measured by SCAT

				Place of Viewing (Regression Weight)			"t" Value of Difference		
Year	Test	Mean	e.d.f.	Class	Dorm	Sor	C-D	C-S	D-S
1960	SCAT I	36.88	93	- .77	-1.05	1.83	.13	1.05	1.16
	SCAT II	34.01	93	- .46	-1.53	1.99	.55	.98	1.45
				Class	Res	Else-where	C-R	C-E	R-E
Fall 1961	SCAT I	37.37	231	.39	- .94	.55	1.14	.06	.59
	SCAT II	33.41	231	1.41	- .73	- .68	1.70	.74	.02
Spring 1962	SCAT I	37.56	156	.83	- .54	- .29	.81	.26	.06
	SCAT II	33.42	156	3.10	- .61	-2.49	2.15*	1.28	.45
Fall 1962	SCAT I	38.25	250	.53	.91	-1.44	.37	.74	.88
	SCAT II	34.65	250	.77	- .51	- .27	1.17	.36	.08
Spring 1963	SCAT I	38.17	224	.29	- .29	-----	.53	----	----
	SCAT II	34.85	224	1.17	-1.17	-----	1.97*	----	----

* Significant at the 5% level

It will be seen in Table 35 that there are but two significant differences, both on SCAT II (Quantitative) and both indicating that those who elect to view in classrooms have higher academic aptitudes than those who view in their residences. Although not yielding significant differences, the direction of the differences in other comparisons supports this interpretation.

Table 36 shows the results of the analysis of variance contrasting previous semester's grade point average according to place of viewing.

Table 36

Relationship of Place of Viewing to Previous Semester's Grade Point Average

Year	Mean	e.d.f.	Place of Viewing (Regression Weight) Class	Residence	Elsewhere	"t" Value of Difference C-R	C-E	R-E
Fall 1961	3.31	231	-.14	-.11	.25	.29	1.83	1.74
Spring 1962	3.41	156	-.03	-.13	.16	.79	.65	1.01
Fall 1962	3.39	250	-.05	-.03	.08	.23	.59	.50
Spring 1963	3.48	224	.04	-.04	---	.92	----	----

It will be noted in Table 36 that no significant difference was observed in the previous semester's grade point average as that was related to place of viewing.

Table 37

Relationship of Place of Viewing to Semester Hours Carried

Year	Mean	e.d.f.	Place of Viewing (Regression Weight) Class	Residence	Elsewhere	"t" Value of Difference C-R	C-E	R-E
Fall 1961	15.49	231	-.11	-.15	.26	.21	.80	.92
Spring 1962	15.60	156	.26	.02	-.29	.82	.74	.44
Fall 1962	15.36	250	.30	-.22	-.09	2.79**	.79	.24
Spring 1963	15.59	224	.24	-.24	----	2.26*	---	---

*Significant at the 5% level

** Significant at the 1% level

Two of the four comparisons of semester hours carried, as this was related to place of viewing, yielded significant differences, with those viewing in classrooms carrying a heavier course load than those viewing in residences. In the other two comparisons involving those viewing in classrooms and those viewing in residences, the differences were in the same direction although not significant.

The mean of a semantic differential item on students' opinions of how hard they studied was subject to analysis of covariance with the following factors held constant: student status, local residence, TV set in residence, pre-test, high school percentile rank, semester hours carried, SCAT I and SCAT II. The results are shown in Table 38.

Table 38

Relationship of Place of Viewing to Amount of Studying

			Place of Viewing (Regression Weight)			"t" Value of Difference		
Year	Mean	e.d.f.	Class	Residence	Elsewhere	C-R	C-E	R-E
Spring 1961	5.43	221	-.21	-.38	.59	.59	1.25	1.55
Spring 1962	15.98	240	.05	-.17	.13	.95	.14	.50

None of the differences were significant.

D. Effects Associated with Student Leaders (Peers) and Non-Leaders

An analysis of variance was performed comparing students who led discussion with those who did not on various measures of aptitude. These measures consisted of scores on SCAT I and II, students' high school percentile rank, and the grade point average they had made last semester.

Table 39

Comparison of Leaders and Non-Leaders on Various Measures of Academic Aptitude

Year	Test	Mean	e.d.f.	Regression Weight Leaders	Regression Weight Non-Leaders	"t" Value of Difference
Fall 1961	SCAT I	37.37	233	.90	- .90	.69
	SCAT II	33.41	233	2.40	-2.40	1.72
	H.S.%tile	71.62	233	7.59	-7.59	2.51*
	Sem. Av.	3.31	233	.06	- .06	.60
Spring 1962	SCAT I	37.56	158	.56	- .56	.34
	SCAT II	33.42	158	-1.21	1.21	.72
	H.S.%tile	72.65	158	-3.57	3.57	1.01
	Sem. Av.	3.41	158	- .03	.03	.34
Fall 1962	SCAT I	38.25	252	.47	- .47	.46
	SCAT II	34.65	252	- .28	.28	.24
	H.S.%tile	73.60	252	.07	- .07	.03
	Sem. Av.	3.39	252	.10	- .10	1.12
Spring 1963	SCAT I	38.17	224	2.61	-2.61	2.72**
	SCAT II	34.85	224	-1.04	1.04	.97
	H.S.%tile	73.66	224	1.05	-1.05	.46
	Sem. Av.	3.48	224	.10	- .10	1.42

* Significant at the 5% level of confidence

** Significant at the 1% level of confidence

It will be seen in Table 39 that only two significant differences emerged. Student leaders in the Fall 1961 were significantly better in their high school percentile rank than were non-leaders; and in the Spring of 1962, student leaders scored significantly higher on SCAT part I. These significant differences, along with the direction of the differences in the other comparisons, suggest a slight difference in academic aptitude favoring the student leaders. However, this difference, if it is real at all, is not very great or impressive.

Table 40 reports the results of analysis of covariance of scores made by student leaders and student non-leaders on measures of achievement. Measures of achievement were the mid-term and final examinations in each semester during 1961-62 and 1962-63. No similar comparison was made for the first year of the experiment inasmuch as so few student leaders were involved. In each of the tests during the fall semester, criterion scores were covaried on local residence, TV set in residence, place of viewing, pre-test, high school percentile rank, semester hours carried, and SCAT I and SCAT II. In the spring semesters, criterion scores were covaried on religious preference, place of viewing, high school percentile rank, semester hours carried, SCAT I, and SCAT II.

Table 40

Analysis of Covariance of Leader vs. Non-Leader Achievement Scores

				Regression Weight		"t" Value of
Year	Test	Mean	e.d.f.	Leader	Non-Leader	Difference
Fall 1961	Mid-Term	40.48	221	.63	- .63	.92
Fall 1961	Final	90.44	221	.12	- .12	.07
Spring 1962	Mid-Term	42.41	147	.44	- .44	.49
Spring 1962	Final	80.86	147	- .21	.21	.13
Fall 1962	Mid-Term	39.55	240	.20	- .20	.34
Fall 1962	Final	93.26	240	3.54	-3.54	2.48*
Spring 1963	Mid-Term	42.89	214	.54	- .54	.82
Spring 1963	Final	84.04	214	1.23	-1.23	1.01

* Significant at the 5% level of confidence.

It will be seen in Table 40 that the adjusted scores on achievement tests of student leaders and student non-leaders differed significantly in only one instance, i.e., student leaders did significantly better than student non-leaders on the final examination in the Fall 1962. Of the eight comparisons made, the direction of the difference favored the student leaders in seven of eight instances. However, as has been reported before, differences were not statistically significant and indeed were quite small.

When achievement test scores were subjected to analysis of variance with no other effects partialed out, the results were not different.

Analyses of variance and covariance were performed on a number of measures thought to be related to academic motivation, and comparisons were made between student leaders and student non-leaders on these measures. These measures included number of semester hours carried, assessment of teaching as a career, a self-assessment of the amount which each student studied, and an assessment of the desirability of guiding others and being guided by others. All but the first item were measured by the semantic differential technique.

The analysis for the first item - semester hours carried - was a simple analysis of variance. The analysis for the remaining items was an analysis of covariance with pre-test, high school percentile rank, semester hours carried, SCAT I, and SCAT II scores held constant.

Table 41

Analysis of Variance and Covariance of Leaders and Non-Leaders on Various Measures of Academic Motivation

Year	Test	Mean	e.d.f.	Regression Weight Leader	Regression Weight Non-Leader	"t" Value of Difference
Fall 1961	Hours Carried	15.49	233	.43	- .43	1.86
	Teaching	6.39	228	- .24	.24	.45
	Studying Hard	5.44	228	.09	- .09	.29
	Guiding Others	11.02	228	- .99	.99	1.49
	Others Guiding Me	15.60	228	-1.15	1.15	1.21
Spring 1962	Hours Carried	15.60	158	.34	- .34	1.19
	Guiding Others	11.31	154	-1.59	1.59	2.14*
	Others Guiding Me	15.13	154	-2.11	2.11	2.12*
Fall 1962	Hours Carried	15.36	252	.04	- .04	.20
	Teaching	16.40	247	.23	- .23	1.03
	Studying Hard	15.98	247	- .01	.01	.06
	Guiding Others	16.34	247	.01	- .01	.06
	Others Guiding Me	16.19	247	- .10	.10	.44
Spring	Hours Carried	15.59	224	.12	- .12	.63
	Guiding Others	11.27	220	- .32	.32	.66
	Others Guiding Me	14.14	220	- .17	.17	.27

* Significant at the 5% level of confidence.

Following are additional tables showing the relationship of student leaders and student non-leaders to various other factors of interest.

Table 42

Residence of Leaders and Non-Leaders

Fall 1961	%	N	Dorm	Frat/Sor	Indep	Home	Other
Leaders	4.68	11	7	2	2	0	0
Non-Leaders	95.32	224	124	55	33	11	1
Total		235	131	57	35	11	1
Per Cent			55.74	24.26	14.89	4.68	.43

D.F. = 4 Chi Square = .98 Significance = .912 (.872)

Fall 1962	%	N	Dorm	Frat/Sor	Indep	Home	Other
Leaders	5.91	15	10	2	1	2	0
Non-Leaders	94.09	239	124	76	27	10	2
Total		254	134	78	28	12	2
Per Cent			52.76	30.71	11.02	4.72	.79

D.F. = 4 Chi Square = 5.05 Significance = .284 (.241)

Table 43

Sex of Leaders and Non-Leaders

Fall 1961	%	N	Male	Female
Leaders	4.68	11	1	10
Non-Leaders	95.32	224	23	201
Total		235	24	211
Per Cent			10.21	89.79

D.F. = 1 Chi Square = .02 Significance = .900 (1.000)

Spring 1962				
Leaders	5.00	8	1	7
Non-Leaders	95.00	152	23	129
Total		160	24	136
Per Cent			15.00	85.00

D.F. = 1 Chi Square = .04 Significance = .840 (1.000)

Fall 1962				
Leaders	5.91	15	1	14
Non-Leaders	94.09	239	32	207
Total		254	33	221
Per Cent			12.99	87.01

D.F. = 1 Chi Square = .56 Significance = .465 (.701)

Spring 1963				
Leaders	8.41	19	4	15
Non-Leaders	91.59	207	23	184
Total		226	27	199
Per Cent			11.95	88.05

D.F. = 1 Chi Square = 1.64 Significance = .201 (.257)

Table 44

School Class of Leaders and Non-Leaders

Fall 1961	%	N	Freshman	Sophomore	Junior	Senior
Leader	4.68	11	8	3	0	0
Non-Leader	95.32	224	168	55	1	0
Total		235	176	58	1	0
Per Cent			74.89	24.68	.43	.00
D.F. = 2			Chi Square = .09		Significance = .957 (1.000)	
Spring 1962						
Leader	5.00	8	5	3	0	0
Non-Leader	95.00	152	109	40	3	0
Total		160	114	43	3	0
Per Cent			71.25	26.87	1.87	.00
D.F. = 2			Chi Square = .60		Significance = .740	
Fall 1962						
Leader	5.91	15	10	4	1	0
Non-Leader	94.09	239	166	62	7	4
Total		254	176	66	8	4
Per Cent			69.29	25.98	3.15	1.57
D.F. = 3			Chi Square = .90		Significance = .826 (.889)	
Spring 1963						
Leader	8.41	19	10	8	1	0
Non-Leader	91.59	207	127	68	10	2
Total		226	137	76	11	2
Per Cent			60.62	33.63	4.87	.88
D.F. = 3			Chi Square = .85		Significance = .836 (.552)	

Table 45

Availability of TV Receivers to Leaders and Non-Leaders

Fall 1961	%	N	Yes TV Set	No TV Set
Leader	4.68	11	10	1
Non-Leader	95.32	224	203	21
Total		235	213	22
Per Cent			90.64	9.36

D.F. = 1 Chi Square = .00 Significance = .977 (1.000)

Fall 1962	%	N	Yes TV Set	No TV Set
Leader	5.91	15	15	0
Non-Leader	94.09	239	194	45
Total		254	209	45
Per Cent			82.28	17.72

D.F. = 1 Chi Square = 3.43 Significance = .068 (.080)

It will be seen in Tables 42 to 45 that no significant relationships were found. It will be of interest to note, however, that the percentage of leaders during the years 1961-62 and 1962-63 ranged from 4.68% to 8.41% of the total class.

As a possible measure of differential motivation, an analysis was made of how far the leaders and non-leaders expected to go in their college education. The results will be seen in Table 46.

Table 46

Highest Grade Expected to be Completed by Leaders and Non-Leaders

Fall 1961	%	N	Freshman	Sophomore	Junior	Senior	Graduate
Leader	4.68	11	0	0	0	9	2
Non-Leader	95.32	224	1	9	6	149	59
Total		235	1	9	6	158	61
Per Cent			.43	3.83	2.55	67.23	25.96
D.F. = 4			Chi Square = 1.42		Significance = .839 (.727)		
Spring 1962							
Leader	5.00	8	0	0	0	4	4
Non-Leader	95.00	152	1	2	0	110	39
Total		160	1	2	0	114	43
Per Cent			.62	1.25	.00	71.25	26.87
D.F. = 3			Chi Square = 2.37		Significance = .500 (.328)		
Fall 1962							
Leader	5.91	15	0	0	0	8	7
Non-Leader	94.09	239	0	3	3	185	48
Total		254	0	3	3	193	55
Per Cent			.00	1.18	1.18	75.98	21.65
D.F. = 3			Chi Square = 6.06		Significance = .112 (.116)		
Spring 1963							
Leader	8.41	19	1	0	0	9	9
Non-Leader	91.59	207	2	0	1	159	45
Total		226	3	0	1	168	54
Per Cent			1.33	.00	.44	74.34	23.89
D.F. = 3			Chi Square = 9.33		Significance = .028 (.108)		

It will be seen in Table 46 that there is no clear relationship between motivation, as here measured, and participation in the program as leaders.

Table 46 a

Expectation of Going to Graduate School by Leaders and Non-Leaders

Fall 1961	%	N	Not Going to Graduate School	Going to Graduate School
Leader	4.68	11	9	2
Non-Leader	95.32	224	165	59
Total		235	174	61
Per Cent			74.04	25.96
	D.F. = 1		Chi Square = .36	Significance = .565 (.733)
Spring 1962				
Leader	5.00	8	4	4
Non-Leader	95.00	152	113	39
Total		160	117	43
Per Cent			73.13	26.87
	D.F. = 1		Chi Square = 2.29	Significance = .139 (.212)
Fall 1962				
Leader	5.91	15	8	7
Non-Leader	94.09	239	191	48
Total		254	199	55
Per Cent			78.35	21.65
	D.F. = 1		Chi Square = 5.88	Significance = .016 (.024)
Spring 1963				
Leader	8.41	19	10	9
Non-Leader	91.59	207	162	45
Total		226	172	54
Per Cent			76.11	23.89
	D.F. = 1		Chi Square = 6.28	Significance = .013 (.021)

It will be seen in Table 46 a that peer-leaders in 1961-62 were no more likely than non-leaders to expect to attend graduate school. In 1962-63, however, peer-leaders were significantly more likely than non-leaders to expect to attend graduate school. It may be that this result is due to the peer-leader program progressively appealing to more professionally oriented students.

On the assumption that participation in the discussion leader program might result in leaders perceiving instructors and/or other students as behaving friendlier toward them than would those not participating in the program, students were asked to rate the perceived degree of friendliness of their instructor and fellow students. The results are given in the tables below.

Table 47

Attitudes of Instructors as Perceived by Leaders and Non-Leaders

Fall 1961	%	N	Very Un-Friendly	Rather Un-Friendly	Neither Friendly Nor Un-Friendly	Rather Friendly	Very Friendly
Leader	4.68	11	0	0	2	8	1
Non-Leader	95.32	224	0	3	59	143	19
Total		235	0	3	61	151	20
Per Cent			.00	1.28	25.96	64.26	8.51
D.F. = 3			Chi Square = .55		Significance = .907 (.907)		
Spring 1962							
Leader	5.00	8	0	0	0	5	3
Non-Leader	95.00	152	0	2	34	92	24
Total		160	0	2	34	97	27
Per Cent			.00	1.25	21.25	60.62	16.87
D.F. = 3			Chi Square = 4.02		Significance = .260 (.231)		
Fall 1962							
Leader	5.91	15	1	0	2	9	3
Non-Leader	94.09	239	0	5	79	144	11
Total		254	1	5	81	153	14
Per Cent			.39	1.97	31.89	60.24	5.51
D.F. = 4			Chi Square = 24.04		Significance = .001 (.005)		
Spring 1963							
Leader	8.41	19	1	1	3	9	5
Non-Leader	91.59	207	3	5	56	123	20
Total		226	4	6	59	132	25
Per Cent			1.77	2.65	26.11	58.41	11.06
D.F. = 4			Chi Square = 7.60		Significance = .110 (.105)		

Table 48

Attitudes of Other Students as Perceived by Leaders and Non-Leaders

	%	N	Very Un-Friendly	Rather Un-Friendly	Neither Friendly Nor Un-Friendly	Rather Friendly	Very Friendly
Fall 1961							
Leader	4.68	11	0	0	1	4	6
Non-Leader	95.32	224	6	2	2	74	140
Total		235	6	2	3	78	146
Per Cent			2.55	.85	1.28	33.19	62.13
D.F. = 4			Chi Square = 6.05		Significance = .196 (.230)		
Spring 1962							
Leader	5.00	8	0	0	0	0	8
Non-Leader	95.00	152	3	1	4	37	106
Total		160	3	1	4	37	114
Per Cent			1.87	.62	2.50	23.12	71.25
D.F. = 4			Chi Square = 2.35		Significance = .670 (.476)		
Fall 1962							
Leader	5.91	15	1	1	1	2	10
Non-Leader	94.09	239	6	4	4	100	125
Total		254	7	5	5	102	135
Per Cent			2.76	1.97	1.97	40.16	53.15
D.F. = 4			Chi Square = 7.86		Significance = .098 (.105)		
Spring 1963							
Leader	8.41	19	4	1	1	7	6
Non-Leader	91.59	207	13	4	1	63	126
Total		226	17	5	2	70	132
Per Cent			7.52	2.21	.88	30.97	58.41
D.F. = 4			Chi Square = 13.20		Significance = .010 (.020)		

In both Table 47 and Table 48 there was one instance found in which there seemed to be a significant relationship between the perceived degree of friendliness and participation in the leader program. However, this did not occur in the other six comparisons and it does not appear, therefore, that participation in the discussion leader program results in a significant change in the leaders' perception of the friendliness of students or instructors.

It was thought that participation in the discussion leader training program might have an effect upon leaders'perception of their experience with the University, their feeling of loyalty to the University or the contribution of the University.

Table 49

Effect of University on Leaders' and Non-Leaders' Capacity to Take Care of Themselves Physically and Emotionally

Fall 1961	%	N	Improved Very Much	Improved Some	Not Changed	Decreased Some	Decreased Very Much
Leader	4.68	11	8	3	0	0	0
Non-Leader	95.32	224	135	81	8	0	0
Total		235	143	84	8	0	0
Per Cent			60.85	35.74	3.40	.00	.00
D.F. = 2			Chi Square = .89		Significance = .647 (.693)		
Spring 1962							
Leader	5.00	8	4	4	0	0	0
Non-Leader	95.00	152	78	67	7	0	0
Total		160	82	71	7	0	0
Per Cent			51.25	44.37	4.37	.00	.00
D.F. = 2			Chi Square = .43		Significance = .800 (.996)		
Fall 1962							
Leader	5.91	15	10	5	0	0	0
Non-Leader	94.09	239	147	85	6	0	1
Total		254	157	90	6	0	1
Per Cent			61.81	35.43	2.36	.00	.39
D.F. = 3			Chi Square = .52		Significance = .914 (1.000)		
Spring 1963							
Leader	8.41	19	9	8	2	0	0
Non-Leader	91.59	207	112	83	10	2	0
Total		226	121	91	12	2	0
Per Cent			53.54	40.27	5.31	.88	.00
D.F. = 3			Chi Square = 1.41		Significance = .703 (.688)		

Table 50

Effect of University on Leaders' and Non-Leaders' Feeling of Loyalty to the University

Fall 1961	%	N	Decreased Very Much	Decreased Somewhat	Not Changed	Increased Somewhat	Increased Very Much
Leader	4.68	11	0	0	0	5	6
Non-Leader	95.32	224	3	3	19	101	98
Total		235	3	3	19	106	104
Per Cent			1.28	1.28	8.09	45.11	44.26
D.F. = 4			Chi Square = 1.50		Significance = .825 (.737)		
Spring 1962							
Leader	5.00	8	0	0	1	4	3
Non-Leader	95.00	152	3	4	27	81	37
Total		160	3	4	28	85	40
Per Cent			1.87	2.50	17.50	53.12	25.00
D.F. = 4			Chi Square = 1.03		Significance = .900 (.853)		
Fall 1962							
Leader	5.91	15	0	1	4	8	2
Non-Leader	94.09	239	5	3	30	116	85
Total		254	5	4	34	124	87
Per Cent			1.97	1.57	13.39	48.82	34.25
D.F. = 4			Chi Square = 7.14		Significance = .136 (.108)		
Spring 1963							
Leader	8.41	19	1	1	9	5	3
Non-Leader	91.59	207	1	11	33	105	57
Total		226	2	12	42	110	60
Per Cent			.88	5.31	18.58	48.67	26.55
D.F. = 4			Chi Square = 16.78		Significance = .004 (.010)		

Table 51

Experience With the University of Leaders and Non-Leaders

Fall 1961	%	N	Very Happy	Rather Happy	Neither Happy Nor Unhappy	Rather Unhappy	Very Unhappy
Leader	4.68	11	5	3	1	1	1
Non-Leader	95.32	224	95	93	24	8	4
Total		235	100	96	25	9	5
Per Cent			42.55	40.85	10.64	3.83	2.13
D.F. = 4			Chi Square = 4.03		Significance = .411 (.366)		
Spring 1962							
Leader	5.00	8	3	4	0	1	0
Non-Leader	95.00	152	41	76	22	11	2
Total		160	44	80	22	12	2
Per Cent			27.50	50.00	13.75	7.50	1.25
D.F. = 4			Chi Square = 1.85		Significance = .760 (.691)		
Fall 1962							
Leader	5.91	15	5	8	0	2	0
Non-Leader	94.09	239	78	100	38	21	2
Total		254	83	108	38	23	2
Per Cent			32.68	42.52	14.96	9.06	.79
D.F. = 4			Chi Square = 3.27		Significance = .514 (.451)		
Spring 1963							
Leader	8.41	19	6	5	4	4	0
Non-Leader	91.59	207	53	97	37	16	4
Total		226	59	102	41	20	4
Per Cent			26.11	45.13	18.14	8.85	1.77
D.F. = 4			Chi Square = 5.82		Significance = .215 (.187)		

No consistent significant differences were found in the above analysis of leaders' and non-leaders' perception of their experience at the University.

E. Attitudes Toward Television and Other Aspects of the Course

In each of the three years, students were asked if they would prefer receiving their lectures delivered conventionally in a large classroom or receiving them by television. The results were as follows:

Table 52

Preference for Conventional Instruction or Instruction by Television
(First Semester)

Year	TV Strongly	TV Somewhat	Either One	Large Classrooms Somewhat	Large Classrooms Strongly
1960	28.1%	25.0%	17.7%	9.4%	19.8%
1961	21.7%	24.7%	12.8%	20.8%	20.0%
1962	13.4%	24.0%	20.1%	23.2%	19.3%

As will be seen in Table 52 students' responses are equally polarized around the neutral point.

In 1962 a series of other questions were asked to elicit student attitudes toward the television learning situation. The results were as follows:

1. Prefer large lecture or television in small classroom for Sociology?

Large classroom strongly	15.0%
Large classroom somewhat	21.7%
Either one	15.7%
Television in classroom somewhat	23.7%
Television in classroom strongly	24.0%

2. Prefer large class lecture or television in residence?

Large classroom strongly	14.3%
Large classroom somewhat	18.7%
Either one	6.7%
Television in residence somewhat	22.3%
Television in residence strongly	38.0%

3. Do you think instructional television should be used in Sociology 105?

Yes	42.0%
Doesn't matter	29.0%
No	29.0%

4. What do you think of instructional television as used in Sociology 105?

Like very much	17.0%
Like somewhat	29.7%
Neither	20.7%
Dislike somewhat	17.0%
Dislike very much	15.7%

5. What do you think of instructional television in general?

Like very much	22.0%
Like somewhat	37.3%
Neither	19.7%
Dislike somewhat	14.0%
Dislike very much	7.0%

6. How would you like quiz instructor to lecture instead of having television?

Like very much	32.3%
Like somewhat	25.3%
Neither	13.3%
Dislike somewhat	20.3%
Dislike very much	8.7%

7. From which aspect of the course do you feel you learned most?

The television lectures	12.3%
Regular discussions	39.7%
Short discussions	1.0%
Readings	43.0%
The term project	4.0%

8. From which aspects of the course do you feel you learned least?

The television lectures	14.0%
Regular discussions	5.3%
Short discussions	61.0%
The readings	5.7%
The term project	14.0%

9. How would you compare Sociology 105 to other courses you are taking?

Like very much more	14.3%
Like somewhat more	37.0%
Like about the same	25.7%
Like somewhat less	17.3%
Like very much less	5.7%

The above responses tend to indicate a general neutral response on the part of students to instructional television as usually used. They are quite favorable toward the idea of television instruction in their residences and reasonably favorable toward instructional television in general. Indeed they seem to prefer instructional television as a general concept somewhat more than they favor its use in this course. It is somewhat surprising and must give pause to note that a majority of students would have preferred to be lectured to by their graduate quiz instructor than to have had television instruction. Televised instruction is not often selected as the most or least important part of the course. It is the readings and the regular discussions which are clearly thought to be the most important aspects of the course. The short discussions (those led by the undergraduate discussion leaders) were selected by more than two-thirds of the students as being the least desirable part of the course.

The relationship of relative preference for conventional large-group instruction or television instruction, and measures of achievement and aptitude (SCAT I and II) during the school year 1960-61 was subjected to analysis of variance.

Table 53

The Relationship of Preference for Television to Measures of Achievement and Aptitude

				Regression Weight			"t" Value of Difference		
Year	Test	Mean	e.d.f.	TV Strongly	Either	Large Class Strongly	TV-E	E-LC	TV-LC
Fall 1960	Mid-Term	43.99	91	.31	-1.38	- .02	.94	.70	.19
	Final	81.84	91	.56	- .14	- .53	.22	.12	.05
	SCAT I	36.87	91	2.18	- .84	-2.46	1.12	.55	1.78
	SCAT II	34.01	91	3.40	- .58	-1.44	1.07	.72	1.91
Spring 1961	Mid-Term	44.36	91	.53	- .10	- .73	.37	.35	.78
	Final	83.50	91	.80	-1.07	-1.41	.54	.09	.67
Fall 1961	Mid-Term	40.48	237	.75	-1.26	- .05	1.80	1.07	.82
	Final	90.63	237	.53	-1.08	1.02	.59	.75	.20
	H.S.%	72.35	237	1.06	- .42	-2.39	.35	.46	.94
	SCAT I	37.34	237	- .31	-1.85	.82	.83	1.42	.70
	SCAT II	33.46	237	- .19	- .71	.42	.26	.56	.35
Spring 1962	Mid-Term	42.32	180	1.05	- .36	.59	1.11	.55	.31
	Final	80.46	180	1.97	- .48	- .28	1.02	.06	.82
	H.S.%	72.04	180	.53	-4.84	1.89	1.12	.25	1.04
	SCAT I	37.36	180	.04	1.38	-1.93	.63	1.15	.81
	SCAT II	33.30	180	.91	- .76	-1.04	.75	.76	.09
Fall 1962	Mid-Term	39.54	249	.49	- .01	.07	.45	.08	.37
	Final	93.26	249	.22	- .63	.45	.32	.45	.09
	H.S.%	73.60	249	1.57	-3.66	-3.36	1.26	.08	1.18
	SCAT I	38.25	249	- .06	- .83	- .24	.45	.38	.11
	SCAT II	34.65	249	- .71	.14	- .40	.45	.32	.16
Spring 1963	Mid-Term	42.91	226	.76	.69	- .99	.06	1.28	1.47
	Final	83.89	226	.55	2.82	-2.00	1.03	1.88	1.10
	H.S.%	73.59	226	2.14	4.25	- .07	.56	.98	.56
	SCAT I	38.04	226	.44	1.46	- .40	.61	.97	.49
	SCAT II	34.77	226	-1.52	1.74	-1.93	1.84	1.79	.22

It will be seen in Table 53 that no significant relationship was found between preference for television or conventional instruction and achievement on the mid-term and final examinations or on the tests of academic aptitude during the three years of the project.

During both semesters 1961-62 and 1962-63, preferences of students for large classroom lectures or lectures by television were related to the place of viewing. The results may be seen in Table 54 .

Table 54

Place of Viewing as Related to Preference for TV or Conventional Large Group Instruction

Fall 1961	%	N	TV Strongly	TV Somewhat	Either One	Large Classroom Somewhat	Large Classroom Strongly
Classroom	34.04	80	12	24	9	14	21
Residence	60.85	143	36	32	19	31	25
Elsewhere	5.11	12	3	2	2	4	1
Total		235	51	58	30	49	47
Per Cent			21.70	24.68	12.77	20.85	20.00
D.F. = 8			Chi Square = 8.57		Significance = .387		
Spring 1962							
Classroom	23.75	38	10	3	5	13	7
Residence	73.12	117	48	33	16	14	6
Elsewhere	3.12	5	1	3	0	1	0
Total		160	59	39	21	28	13
Per Cent			36.87	24.37	13.12	17.50	8.12
D.F. = 8			Chi Square = 25.09		Significance = .001		
Fall 1962							
Classroom	50.39	128	13	22	27	38	28
Residence	46.06	117	19	37	23	18	20
Elsewhere	3.54	9	2	2	1	3	1
Total		254	34	61	51	59	49
Per Cent			13.39	24.02	20.08	23.23	19.29
D.F. = 8			Chi Square = 14.83		Significance = .006		
Spring 1963							
Classroom	42.48	96	18	22	14	23	19
Residence	57.52	130	43	27	26	18	16
Elsewhere	.00	0	0	0	0	0	0
Total		226	61	49	40	41	35
Per Cent			26.99	21.68	17.70	18.14	15.49
D.F. = 4			Chi Square = 10.34		Significance = .038		

It will be seen that in the Spring semesters of 1962 and 1963, those who viewed in residences were significantly more favorable to television instruction than those who viewed in classrooms. In the Fall semesters, when the experience of learning by television was newer to them, students viewing in classrooms and residences did not differ as much in their assessment of television or conventional large group lectures.

Shedding further light on the above analysis is the one which follows. It will be recalled that some students took the second semester of the course prior to taking its first semester. Accordingly, in the years 1961-62 and 1962-63, students in the first semester were asked whether or not they had taken the second semester previously. When this information was related to students' expressed preference for television or conventional large class instruction, the results were as shown in Table 55.

Table 55

Relationship of Previous Experience With Television in This Course to Preference for Television or Conventional Large Group Instruction

Fall 1961	%	N	TV Strongly	TV Somewhat	Either One	Large Classroom Somewhat	Large Classroom Strongly
Yes	10.64	25	7	11	2	1	4
No	89.36	210	44	47	28	48	43
Total		235	51	58	30	49	47
Per Cent			21.70	24.68	12.77	20.85	20.00
D.F. = 4			Chi Square = 9.27		Significance = .056 (.052)		
Fall 1962							
Yes	9.45	24	9	6	5	2	2
No	90.55	230	25	55	46	57	47
Total		254	34	61	51	59	49
Per Cent			13.39	24.02	20.08	23.23	19.29
D.F. = 4			Chi Square 15.71		Significance = .006 (.003)		

It will be seen in Table 55 that students who had previously taken the second semester of the course (and who, therefore, had had experience with television instruction) preferred television instruction significantly more that those who had not taken the course before and who, therefore, were generally having their first experience with learning by television.

Table 56

Leaders' and Non-Leaders' Preference for Television or Conventional Large Group Instruction in 1962-63

Month	Question	Mean	e.d.f.	Regression Weight Leader	Regression Weight Non-Leader	"t" Value of Difference
October	Prefer TV or large lecture	3.29	144	.07	- .07	.284
January	Prefer TV or large lecture	2.75	139	- .38	.38	2.368*
April	Prefer TV or large lecture	2.73	139	- .31	.31	1.743

* Significant at .02 level

It will be seen in Table 56 that leaders and non-leaders began the semester with no difference in preference between televised and conventional instruction. By January, however, leaders preferred televised instruction significantly more than did non-leaders. In April, they still preferred televised instruction more than did non-leaders, but the difference was not quite significant at the .05 level. These findings are consistent with those of part "G" of this chapter in which it is shown that, on retrospect, leaders are more favorable than non-leaders toward televised instruction. As the foregoing table shows, the difference appears to be due to experience rather than to pre-selection.

The following relationships also were subject to chi square analysis with the results as shown.

Table 57

Student Opinions About the Course Which Yielded Significant Interactions

	Chi Square	Level of Significance
Do you think instructional television should be used in Sociology?		
a. Prefer large class lecture or TV in residence for Sociology?	132.83	.001
b. Prefer large class lecture or TV in small classroom for Sociology?	178.33	.001
c. What do you think of instructional television as used in Sociology 105?	266.27	.001
d. What do you think of the idea of instructional television in general?	128.01	.001
Prefer large class lecture or television in small classroom for Sociology?		
a. Prefer large class lecture or television in residence for Sociology?	314.48	.001
b. What do you think of instructional television as used in Sociology?	261.93	.001
c. What do you think of the idea of instructional television in general?	134.32	.001
Prefer large class lecture or television in residence for Sociology?		
a. What do you think of instructional television as used in Sociology?	153.13	.001
b. What do you think of the idea of instructional television in general?	68.23	.001
What do you think of instructional television as used in Sociology?		
a. What do you think of instructional television in general?	176.77	.001
From which aspect of the course do you think you learned most?		
a. Do you think television should be used in Sociology?	18.90	.001
b. How would you like the quiz instructor to lecture instead of having television?	65.50	.001
c. From which aspect of the course do you feel you learned least?	17.18	.003
d. What do you think of instructional television as used in Sociology 105?	28.56	.001

	Chi Square	Level of Significance
From which aspect of the course do you think you learned least?		
a. How would you like the quiz instructor to lecture instead of having television?	21.78	.007
b. Do you think instructional television should be used in Sociology?	10.67	.034
How would you like for the quiz instructor to lecture instead of having television?		
a. Do you think instructional television should be used in Sociology?	45.26	.001
b. Prefer large class lecture or television in small classroom for Sociology?	54.14	.001
c. Prefer large class lecture or television in residence for Sociology?	37.68	.001
d. What do you think of instructional television as used in Sociology?	75.53	.001
e. What do you think of the idea of instructional television in general?	33.05	.001
How hard do you work on school work compared to others?		
a. How important are good grades to you?	32.87	.001
b. Do you think instructional television should be used in Sociology?	15.55	.017
How far do you expect to go in your college education?		
a. How hard do you work on school work compared to others?	11.93	.009
How would you compare Sociology 105 to the other courses you are taking?		
a. How hard do you work on school work compared to others?	19.37	.002
b. What do you think of instructional television as used in Sociology?	31.12	.003
c. Prefer large class lecture or television in small classroom for Sociology?	36.58	.001
d. Do you think instructional television should be used in Sociology?	12.95	.046

In the table above all of the differences occur in the predictable direction. That is to say, students who preferred television under one set of circumstances were more likely than those who rejected it to prefer it under a somewhat different set of circumstances; students who felt this was a good course approved the use of television more than students who thought it was not a good course; students who thought the television lectures were an important aspect of the course were more approving of television under different circumstances than those who did not think it was an important aspect; and conversely, those who thought television was the least important aspect of the course tended to reject it in all circumstances. Those who judged that they worked much harder on their school work than others were less likely to approve of the use of television than those who thought they worked only a little harder, about the same, or much less. Those who expected to go to graduate school judged that they worked harder than those who did not expect to go to graduate school.

In the following series of chi square comparisons no significant differences were found.

Table 58

Student Opinions About the Course Which Did Not Yield Significant Interactions

Prefer large classroom lecture or television lecture for social science courses?
  a. Local residence?
  b. Do you have a television set in your residence?
  c. Received grade point average for all courses last semester?
  d. Student status, i.e., student leader or non-leader?

Have you had instructional television before this semester?
  a. Prefer large class lecture or television in small classrooms for Sociology?
  b. Prefer large class lecture or television in residence for Sociology?
  c. Do you think instructional television should be used in Sociology?
  d. What do you think of instructional television as used in Sociology?
  e. What do you think of the idea of instructional television in general?

How far do you think you will go in school?
  a. What do you think of the idea of instructional television in general?
  b. Would you prefer conventional lecture in a large classroom or a television lecture for a social science course?
  c. What do you think of instructional television as used in Sociology?
  d. Prefer large class lecture or television in residence for Sociology?
  e. Prefer large class lecture or television in small classroom for Sociology?
  f. Do you think instructional television should be used in Sociology?
  g. Have you had instructional television before?

How would you compare Sociology 105 to the other courses you are taking?
  a. How important are good grades to you?
  b. How far do you think you will go in school?
  c. Have you had instructional television before?
  d. Prefer large class lecture or television in residence for Sociology?

e. What do you think of the idea of instructional television in general?
f. How would you like the quiz instructor to lecture instead of having television?
g. From which aspect of the course do you feel you learned least?
h. From which aspect of the course do you feel you learned most?

From which aspect of the course do you think you learned least?
a. What do you think of the idea of instructional television in general?
b. What do you think of instructional television as used in Sociology?
c. Prefer large class lecture or television in residence for Sociology?
d. Prefer large class lecture or television in small classrooms for Sociology?
e. Have you had instructional television before?
f. How far do you think you will go in school?
g. How important are good grades to you?
h. How hard do you work on school work compared to others?

From which aspect of the course do you feel you learned the most?
a. Prefer large class lecture or television in residence for Sociology?
b. Prefer large class lecture or television in small classroom for Sociology?
c. What do you think of the idea of instructional television in general?
d. How hard do you work on school work compared to others?
e. How important are good grades to you?
f. How far do you think you will go in school?
g. Have you had instructional television before?

How far do you expect to go in your college education?
a. How important are good grades to you?
b. What do you think of the idea of instructional television in general?
c. What do you think of instructional television as used in Sociology?
d. Prefer large class lecture or television in residence for Sociology?
e. Prefer large class lecture or television in small classroom for Sociology?
f. Do you think instructional television should be used in Sociology?
g. Have you had instructional television before?
h. How would you like quiz instructor to lecture instead of having television?
i. From which aspect of the course do you feel you learned least?
j. From which aspect of the course do you feel you learned most?
k. How would you compare Sociology 105 to other courses you are taking?

How hard do you work on school work as compared to others?
  a. Prefer large class lecture or television in residence for Sociology?
  b. What do you think of instructional television as used in Sociology?
  c. Prefer large class lecture or television in small classrooms for Sociology?
  d. Have you had instructional television before?
  e. How far do you think you will go in school?
  f. What do you think of the idea of instructional television in general?

How important are good grades to you?
  a. How far do you think you will go in school?
  b. What do you think of the idea of instructional television in general?
  c. What do you think of instructional television as used in Sociology?
  d. Have you had instructional television before?
  e. Do you think instructional television should be used in Sociology?
  f. Prefer large class lecture or television in small classroom for Sociology?
  g. Prefer large class lecture or television in residence for Sociology?

How would you like quiz instructor to lecture instead of having television?
  a. Have you had instructional television before?
  b. How far do you think you will go in school?
  c. How important are good grades to you?
  d. How hard do you work on school work compared to others?

Table 58 a

Matrix of Interactions of Students' Opinions About the Course (Summary of Tables 57 and 58)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
(1) Prefer large class lecture or TV in residence?	--	*	*	*	*		*				*			
(2) Prefer large class lecture or TV in small classroom?	*	--	*	*	*			*			*			
(3) Do you think ITV should be used in Soc. 105?	*	*	--	*	*		*	*	*	*	*			*
(4) What do you think of ITV as used in Soc. 105?	*	*	*	--	*			*	*		*			
(5) What do you think of ITV in general?	*	*	*	*	--		*				*			
(6) Have you had ITV before this semester or course?						--								
(7) Place viewed Soc. TV lectures	*		*		*		--					*		*
(8) How well do you like Soc. compared to other courses?		*	*	*				--						*
(9) From which aspect of the course did you learn most?			*	*					--	*	*			
(10) From which aspect of the course did you learn least?			*						*	--	*			
(11) Prefer quiz instructor to lecture or have TV lecture?	*	*	*	*	*				*	*	--			
(12) How far do you think you will go in school?							*					--		*
(13) How important are good grades to you?													--	*
(14) How hard do you work in school compared to others?			*				*	*				*	*	--

* significant at .05 level or better

F. Attendance and Its Relationship to Other Factors

As has been recorded previously, attendance at all sessions was essentially voluntary. Students were expected to attend, of course, but no attendance was taken. However, in the Spring 1962 semester, a sample of attendance was taken at all known viewing and discussion locations for six short discussion sections and nine televised lecture sessions. The results reported in this section are based upon that sampling. A sampling of attendance was also made of two other televised courses in the Fall semester 1963 in which attendance was regularly taken.

Table 59

Attendance at Television Lectures and Student-Led Discussion Sections in Sociology 105 and Two Other Televised Courses

	Attended All	Missed Half or More
Sociology TV Lecture	27%	18%
Sociology Short Discussion Section	31%	24%
Hygiene TV Lecture	47%	7%
Education TV Lecture	44%	8%

It will be seen in Table 59 that fewer than one-third of the students attended all the sessions at which attendance was taken and more than one-fifth of the students missed half or more of the sessions. Attendance in the other two courses was markedly better.

The average rate of attendance was 75%. In both the hygiene and education course the average rate of attendance was 84%. The rate of absence in Sociology would appear to have significant implications for the practice of allowing younger college students to elect whether or not to attend, especially when it will be recalled that this course was rated very favorably by the same students and their absences can not, therefore,be attributed to this being a poor course.

Analysis of covariance was performed contrasting those who missed four or more televised lectures with those who viewed all lectures on the following criteria: final examination, rating of this course as compared to other courses, preference for receiving lectures in conventional large classroom as compared to television lectures. The analysis was done holding constant the following factors: sex, student leader or non-leader, rating of quiz instructor, year in school, sociability, conservative-radical, dependent-independent, SCAT I and SCAT II.

Table 60

Amount of Attendance at TV Lectures as Related to Achievement and Ratings of the Course and of Television

Test	Mean	e.d.f.	Regression Weight Missed 4	Regression Weight Missed None	"t" Value of Difference
Final Exam	83.10	177	.35	-1.30	.75
Rating of Course	2.70	177	-.04	- .01	.13
Preference for TV	2.83	177	-.01	.03	.13

It will be seen in Table 60 that no significant relationship was found between the number of times students attended the televised lectures and their score on the final examination, their rating of the course, or their preference for television.

Chi square analysis was performed comparing the regularity of attendance at the short student-led discussions and the regularity of attendance at the television lectures. This analysis yielded a chi square of 22.45 which, with nine degrees of freedom, is highly significant at the .009 level. This indicates that students were consistent in their pattern of attendance at the televised lectures and at the short discussion sections.

Regularity of attendance at both the televised lectures and the student-led discussions was subjected to chi square analysis on the following factors:

1. Place of viewing (classroom, residence, or elsewhere)
2. Sex
3. Time of the lecture

No significant differences were found.

It is, perhaps, somewhat surprising that regularity of attendance seemed not to be related to either the time of the sessions or the place where students normally attended.

G. The Retrospective Study

Early in 1962, a questionnaire was sent to 499 students who had been in the course during the previous two years and who could be identified as still in school. Four hundred and twenty-two (84%) of the questionnaires were returned, 389 (78%) were usable. Of this number, 356 had not been student leaders, while 33 had previously been student leaders. An additional 212 students were identified as no longer in school and questionnaires were sent to them. Of these, 138 (65%) returned usable questionnaires. There were just two former student leaders in this group and their responses were not analyzed.

The results of this questionnaire were considered to be quite important in that it sampled the opinion of students a year or two after they had completed the course and at a time when they had had substantial other academic experience with which to compare the essentially novel procedures of this course.

Table 61

Responses to the Retrospective Questionnaire

In School		Out of School	
Leader	Non-Leader	Non-Leader	
			1. How did Sociology 104-105 compare with most other courses you have taken at the University from the standpoint of the amount you learned.
36%	15%	17%	a. Learned much more in this course than most.
39%	32%	33%	b. Learned somewhat more in this course than most.
18%	34%	35%	c. Learned about as much in this course as in most.
6%	16%	12%	d. Learned somewhat less in this course than in most.
0%	3%	4%	e. Learned much less in this course than in most.
			2. How did Sociology 104-105 compare with most other courses you have taken at the University from the standpoint of being interesting?
49%	27%	22%	a. Much more interesting than most.
42%	39%	37%	b. Somewhat more interesting than most.
3%	16%	22%	c. About as interesting as most.
6%	13%	11%	d. Somewhat less interesting than most.
0%	5%	7%	e. Much less interesting than most.

In School		Out of School	
Leader	Non-Leader	Non-Leader	
			3. Where did you most frequently attend the TV lecture?
33%	31%	30%	a. In a classroom.
61%	65%	63%	b. In my residence.
6%	5%	7%	c. Elsewhere.
			4. Why did you attend where you did?
67%	75%	72%	a. Most convenient place.
24%	15%	19%	b. Schedule made it necessary.
9%	7%	7%	c. Best learning atmosphere.
0%	3%	2%	d. Friends attended there.

If it were your decision to make and basing it upon your own experience, what would you do about the following situations?

85%	72%	71%	5. a. Continue giving lectures by television.
15%	28%	29%	b. Give conventional lectures in a large hall.
91%	80%	73%	6. a. Continue allowing students to watch television in their residence or other classrooms.
9%	20%	27%	b. Require students to watch television lessons in classrooms.
82%	39%	43%	7. a. Continue discussions led by students following the short television lectures.
18%	61%	57%	b. Discontinue discussions led by students.

Using the following five point scale, rate the items below according to the extent they contributed to the amount you learned from Sociology 104-105.

1. Contributed nothing
2. Contributed little
3. Contributed some
4. Contributed quite a bit
5. Contributed very much

(5)* 3.79	(4) 3.32	(4) 3.30	8. The television presentation.
(7) 2.85	(6) 2.64	(6) 2.92	9. Being able to watch television outside of the classroom.
(1) 4.39	(1) 4.20	(1) 3.95	10. The readings.

---

* Numbers in parentheses indicate rank order; the other figures are means.

In School		Out of School	
Leader	Non-Leader	Non-Leader	
(6) 2.94	(7) 2.13	(7) 2.35	11. The short discussions following the TV lectures.
(3) 3.97	(3) 3.71	(3) 3.54	12. The hour long discussion with graduate assistants.
(2) 4.25	(2) 3.89	(2) 3.78	13. The textbook or other readings.
(4) 3.91	(5) 3.26	(5) 3.10	14. The term project.

Using the same five point scale, rate the following items below according to the extent they contributed to making the course interesting.

(5) 3.52	(5) 2.88	(5) 3.11	15. The television presentation.
(7) 3.03	(7) 2.81	(6) 3.09	16. Being able to watch television outside of the classroom.
(2) 4.09	(1) 3.89	(1) 3.80	17. The readings.
(6) 3.30	(6) 2.20	(7) 2.33	18. The short discussions following the TV lectures.
(4) 3.79	(2) 3.63	(3) 3.42	19. The hour long discussion with graduate assistants.
(3) 3.85	(2) 3.63	(2) 3.55	20. The textbook or other readings.
(1) 4.12	(4) 3.53	(4) 3.26	21. The term project.

The next series of questions were only for those who had previously been student discussion leaders.

Percentage Distribution For Student Discussion Leaders Only	
	22. How much did your training as a discussion leader contribute to the amount you learned from Sociology 104-105?
0	Contributed nothing
3	Contributed little
22	Contributed some
41	Contributed quite a bit
34	Contributed very much

Percentage Distribution For Student Discussion Leaders Only	
	23. How much did your training as a discussion leader contribute to making Sociology 104-105 interesting?
3	Contributed nothing
6	Contributed little
9	Contributed some
31	Contributed quite a bit
51	Contributed very much
	24. If you had to do it over, would you serve as a discussion leader in this course?
55	I certainly would
30	I probably would
6	I do not know
3	I probably would not
6	I certainly would not

Rate the various aspects of your experience as a discussion leader on the questions below.

	25. Gave me practice in leadership.
3	Absolutely no value
6	Little value
18	Some value
36	Quite valuable
36	Very valuable
	26. Gave me more status with my fellow students.
12	Absolutely no value
30	Little value
42	Some value
12	Quite valuable
3	Very valuable
	27. Helped me understand the material in the course better.
0	Absolutely no value
3	Little value
36	Some value
33	Quite valuable
27	Very valuable

Percentage Distribution For Student Discussion Leaders Only	
	28. Gave me a better understanding of what it is like to be a teacher.
3	Absolutely no value
3	Little value
24	Some value
39	Quite valuable
30	Very valuable
	29. Gave me a feeling of "belonging" in the University which I would not otherwise have had.
18	Absolutely no value
27	Little value
24	Some value
18	Quite valuable
12	Very valuable

A number of comments can be made in regard to Table 61 which expresses the opinion of students who had been out of the course for one or two years at the time they responded to the questionnaire.

1. There was little or no difference between the responses of students who were students still attending school and those who, for a variety of reasons, had left school. More particularly, there is no evidence to suggest that whatever factors led to some students staying in school while others left were in any way related to this course or were reflected in their responses to this questionnaire.

2. The attitude of former students toward the course was quite favorable as compared to other courses, both in regard to probable learning from it and interest in it. Leaders were somewhat more favorable in their attitudes than non-leaders.

3. About two-thirds of the former students reported that they viewed in residence halls or elsewhere, and about one-third viewed in classrooms. This is substantially in agreement with previous responses of students while they were in the class prior to 1962-63. It will be recalled that in 1962-63 one section was moved from the first period to a mid-morning period, at which time the number of students attending in classrooms went up significantly.

4. The reasons given by former students for viewing where they did were related almost exclusively to convenience and to scheduling. This is consistent with the finding that viewing in classrooms increased when a section was moved from the first period to mid-morning. Only a small minority of students indicated that they viewed where they did because of a better atmosphere for learning.

5. In retrospect, students would continue using television (about 75%) instead of reverting to conventional large group lectures. And they clearly favored viewing in residences if television is to be used. Leaders were even more positive on both points than were the others.

6. A majority of the non-leader group favored discontinuing the student-led discussion sections. The leaders, on the other hand, favored continuing them. (See Tables 62 - 64 for evidence of increasing approval of these sections).

7. In rating the relative importance of various elements of the course, there was essential agreement between the leaders and non-leaders in that both ranked the student-led discussions and the privilege of viewing in residences as the least important contributors to learning and interest in the course. Both leaders and non-leaders agreed that the readings were the most important elements, with the graduate-led quiz sections and the televised lectures ranked in between.

8. The student leaders seemed to agree that participation in the program as a discussion leader added to their learning in the course and added to its interest for them. It will be recalled, however, that objective measures of achievement did not support this belief.

9. If presented with the opportunity again, the student leaders would be likely to repeat the experience.

10. In general, the leaders believed that their training and experience as discussion leaders gave them practice in leadership and some understanding of what it is like to be a teacher. It did not, in their opinion, do much toward raising their status among their fellow students or give them a greater sense of "belonging" in the University.

An analysis of student responses to several questions concerning the student-led discussions was made in which consideration was given to the year in which the course was taken. Data obtained from students currently taking the course were also considered.

Table 62

Percentage of Students Favoring Continuation or Discontinuation of the Student-Led Discussions by Year

	N	1960-61	1961-62	1962-63
Continue	373	37	44	51
Discontinue	456	63	56	49

D.F. = 2 Chi Square = 10.968 Significance = <.01

Table 63

Mean Rating by Students of the Contribution of the Student-Led Discussions to Learning

	Year			"t" Value of Difference		
	1960-61	1961-62	1962-63	60/61-61/62	60/61-62/63	61/62-62/63
Mean	2.15	2.21	2.24			
σ	1.12	1.17	1.15	.564	.933	.321

Table 64

Mean Rating of Students of the Contribution of the Student-Led Discussions to Interest in the Course

	Year			"t" Value of Difference		
	1960-61	1961-62	1962-63	60/61-61/62	60/61-62/63	61/62-62/63
Mean	2.16	2.30	2.45			
σ	1.21	1.33	1.34	1.13	2.61**	1.359

** Significance = <.01

It will be seen in Tables 62 to 64 that there was progressive improvement from year to year in students' assessment of the student-led discussion.

This improvement was significant in the case of students' judgements as to whether this aspect of the course should be continued or discontinued. In fact, by 1962-63, students were divided equally on this question, whereas in previous years a majority favored discontinuing the student-led discussions. With respect to students' ratings of the contribution of this aspect of the course as it contributed to interest in the course, there was a significant increase in the rating from 1960-61 to 1962-63.

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CHAPTER VI

Discussion and Summary of Results

The purpose of this chapter is to summarize the salient findings reported in the previous chapters and to discuss significant implications and interrelationships. In general, this will follow the organization of the previous chapter in which the reader will find detailed data presented.

A. Characteristics of the Population

Each semester the number of students taking the course was in the neighborhood of 400 and ranged from 393 to 450. During the first year, the experimental population, i.e., the number of students for whom all data were available and who were, therefore, considered in the analysis, was 96; in the following four semesters, the experimental population ranged from 160 to 254 students.

The students were predominately female (82 to 89 per cent); about half of them lived in dormitories (53 to 59 per cent); approximately one-fourth (23 to 31 per cent) lived in fraternities or sororities and the remainder lived elsewhere; women were somewhat more likely than men to reside in dormitories. Over half of the students were enrolled in an Education curriculum, and about forty per cent in Liberal Arts & Sciences. The scholastic aptitude of the population (as measured by the School and College Aptitude Test) was less than the aptitude of freshmen generally entering this University. Their grade point average was somewhat higher than the average freshmen grade point average.

A great majority of the students were freshmen (69 to 84 per cent), and freshmen and sophomores combined each year to account for more than 95 per cent of the experimental population. There was no consistent significant interaction between class and place of residence. There was no consistent significant interaction between class and grade point average for the previous semester.

Men and women did not differ significantly in terms of the previous semester's grade point average, but men were significantly more likely than women to expect to go to graduate school. Most students (70 to 91 per cent) had a television receiver available to them in their residence, but women were significantly more likely than men to have a television receiver available to them. As a consequence, substantially less viewing in residences was done by men.

B. Place and Time of Viewing

When given a choice of viewing in classrooms, residences, or elsewhere, a large number of students elected to view in places other than the classroom. The percentage viewing in each location varied depending upon the hour when the class was presented. When both sections of the televised lecture were given at the first period in the morning or afternoon approximately two-thirds of the students elected to view in residences. Inasmuch as the population which viewed in classrooms during the afternoon hour was only a little less than half, it is apparent that very few students came to classrooms for the eight o'clock class.

The reason that students gave for viewing where they did was consistently associated with "convenience", and rarely associated with any academic concern such as better viewing or study conditions. It was most convenient for students not to come to campus for the first hour; there was somewhat less convenience in being able to stay away from the campus for the first hour after noon; and still less for the mid-morning hour when classes in adjacent hours would require many students to be on the campus. The mid-morning hour may be taken as the most convenient time to be on campus, but even when the class was offered during mid-morning, only a small majority elected to view in classrooms. It seems safe to infer, therefore, that on a sprawling campus with residence halls located at some distance from classrooms, if offered the option of coming to classrooms or viewing in residences, approximately half of the students will elect one condition and half will elect the other.

During this experiment, only one course was offered with the option of viewing outside of classrooms. Furthermore, there were no special arrangements made in the dormitories to make them particularly attractive or suitable for viewing. It seems likely that if additional courses were televised to residences and if conditions in the residences were adapted for television viewing, more students would find it convenient and suitable to use viewing areas other than classrooms.

Of considerable interest was the finding that those who lived in fraternities and sororities (although they represented only about one-fourth of the population) were more likely in proportion to their number to view in their residences than were those who lived in dormitories. This is probably due to fraternities and sororities being more likely to offer satisfactory viewing conditions than were generally found in the dormitories. It was shown that women had more access to television receivers than men, and, in fact, that they made greater use of them. Hence, in the dormitories (where most students reside and over which the University has direct control), institutional action to improve viewing conditions would very likely result in an increased number of students electing to view outside of class.

It would seem, therefore, that with about half of the students electing to view outside of class under conditions of this experiment, an institutional effort to systematically use dormitory areas for viewing would result in substantial, i.e., greater than 50 per cent, reduction in classroom space required for the courses so treated.

It has been seen that students appear to elect their place of viewing on the basis of convenience, and some suggestion has been offered as to how the factor of convenience might be maximized. Consideration must next be given to evidence as to whether students who elect to view in classrooms differ in academic aptitude or motivation from those who do not.

With respect to the previous semester's grade point average, no differences were found between those viewing in classrooms and those viewing elsewhere. In regard to a standard measure of academic aptitude - The School and College Aptitude Test - there was a suggestion, but far from conclusive evidence, that those who viewed in classrooms were superior to those who viewed elsewhere.

There was no difference between groups with respect to the amount they studied or their expectations to do graduate work, when sex and place of residence were held constant, but those who viewed in classrooms carried a heavier load than those who viewed elsewhere. This latter finding does not necessarily indicate that those who carry heavier loads are more likely to want to view in classrooms; rather it may be that because they carry more courses they are more likely to be on campus and, therefore, more likely to find it convenient to view there.

C. Student Achievement

The crucial question is whether place of viewing had any effect upon achievement. This comparison was made with respect to twelve tests, the mid-term and final examinations, during each of six semesters. On one of the twelve tests, those who viewed in classrooms achieved significantly more than those who viewed in dormitories. No significant differences were found with respect to any of the other eleven tests. In general, therefore, it appears that place of viewing has no practical effect upon achievement.

D. Effects Associated with Student Leaders and Non-Leaders

Undergraduate students who led discussion came from two and, later, three sources. The experiment was started using selected upperclassmen. In general, they did not succeed, primarily it seemed because they could not fit themselves into the role of leaders of discussion about televised lectures. They strove instead to be lecturers themselves - a role which they were not equipped to fill and which it was not in the interest of the experiment for them to fill.

Then students from the class itself were recruited and trained as discussion leaders. At first this was done to supplement the upperclassmen, but, throughout most of the experiment, these students (the peer-leaders) were the major source of discussion leaders. It is for the second group, the peer-leaders, that quantifiable data were collected. After the first semester, the number of peer-leaders involved ranged from 18 to 32, or between about 5 and 8 per cent of the class enrollment.

Later, the same students were encouraged in various ways to continue as discussion leaders beyond the period in which they were enrolled in the course, and some continued as leaders throughout the experiment.

Chapter III and Appendix IV trace the history of those discussion leaders who were trained while enrolled in the course and who, to some extent, remained with the program for additional years. The outcome for those leaders was far different than for those who joined the program as upperclassmen.

Indeed, as has been seen in Chapter III, these students showed a common identification, they consistently committed a number of hours a week to their duties, they developed a sense of the purpose of the program, and brought appropriate strategies of discussion leading to bear. The accomplishment was remarkable since the role of peer-leader provided few tangible rewards to those who volunteered for it, and as a role itself it held no authority or control over students except demonstrated competency in guiding the discussion. The peer-leaders themselves were enthusiastic about the program, felt almost unanimously that it should be retained, and that it contributed to their own understanding of social science, provided them a new appreciation of what it meant to be a teacher and was valuable in giving practice in group leadership. They also felt that their role contributed to the learning of the other students in the course and to their interest in the course.

However, much of the quantifiable data on the leaders, comparing them with the non-leaders, yielded a somewhat fuller picture.

It was thought that the discussion leading program would attract students of higher academic aptitudes. In general, this was not confirmed.

It was believed that leaders might differ from non-leaders on any or all of the following measures: extent of anticipated education; semester hours carried; interest in teaching; amount of studying; desire to guide others or to be guided by others. In general, leaders did not differ from non-leaders on any of these factors, except that there is some evidence that leaders may be more likely to plan to attend graduate school.

Nor were sex, place of residence, availability of television receivers or year in school factors in their participation.

Did the training and experience in leading discussion result in greater learning in the course? Comparisons made on eight tests of achievement yielded one significant difference favoring the leader group. All but one of the other differences were also in the direction of favoring the leader group. Certainly the effect on achievement of participating in the leader program was not detrimental, but neither was it shown to be decisively influential.

One of the outcomes predicted for those who participated in the program was a greater and more satisfactory feeling of "belonging", of identification with the University. Comparisons were made of leaders and non-leaders with respect to: perceived attitudes of instructors; perceived attitudes of students; effect of the University on capacity to care for themselves physically and emotionally; feelings of loyalty to the University; and their general experience with the University. Again, no consistent significant differences were found.

In short, these data yielded no objective discrimination between leaders or non-leaders, either to prior selection or outcomes.

On the other hand, the retrospective study of student opinion a year or two after having completed the course showed leaders consistently rating the course more favorably and being far more favorable toward student discussion programs than were non-leaders. Furthermore, they believed that the training added considerably to their interest in the course and their learning from it, and that it gave them valuable practice in leadership and in understanding the role of teachers. They were consistent in agreeing with the data collected previously in that they did not believe that the program contributed much to their status among their fellow students or to their feeling of "belonging" at the University. Eighty-five per cent of these former peer-leaders indicated that if they had the opportunity again they probably or certainly would want to serve as leaders.

Thus, some of the data and impressionistic evidence are in conflict, and there is a strong suggestion that there is value in the program for those who participate in it which was not successfully measured objectively.

E. Attitudes Toward Television and Other Aspects of the Course

In general, the findings of this study in each of its three years, with respect to student attitudes toward televised instruction were consistent with attitudes of college students reported by others.[1] That is, students' attitudes were equally polarized between instruction by television and in large classrooms about the neutral point.

Several interesting variations occurred. Students were much more positive toward television in their residences than television received in classrooms. However, they were realistic enough in the retrospective study to understand that the place of viewing is unimportant in its contribution to learning or interest in the course. Also, there was a fairly consistent interaction between the place that students viewed and their assessment of television; those who viewed in residences thought better of televised instruction than those who viewed in classrooms.

Of considerable importance, perhaps, is the finding that previous experience with televised instruction was positively related to students' ratings of it. This is contrary to any presumed novelty effect but, instead, is consistent with the idea that students may initially reject the unfamiliar but come to accept it with experience.

In general, students' attitudes toward television tended to cluster in consistent patterns. For instance, students who preferred television under one set of conditions were more likely than those who rejected it to prefer it under somewhat different sets of conditions, and those who approved of the course generally also approved of it being presented in part by television.

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[1] Schramm, W., What we know about learning from instructional television, In Schramm, W. (ED.), Educational Television: The Next Ten Years, Stanford University Press, Stanford, California, 1962.

No relationship was found between preference for television and measures of course achievement or academic aptitude.

The opinions of students both during the course and in retrospect a year or two later rated the elements of the course in the folowing order of importance: (1) readings (2) graduate-led hourly discussions (3) the televised lectures (4) the term project (5) the discussions led by undergraduates. Indeed, except for the discussion leaders who favored them, a majority of students rated the undergraduate-led discussions as the least important element of the course and would discontinue them. However, the evaluation by students of this part of the project improved from year to year, and in the last year, opinion as to its values was approximately equally divided.

F. Attendance and Its Relationship to Other Factors

One of the most striking findings of the study was the high rate of absence at the televised lectures and student-led discussions. (For purposes of this study, attendance was taken periodically, but in general attendance was not taken, and, of course, students knew this). Fewer than one-third of the students attended all the sessions at which attendance was taken, and more than one-fifth of them missed more than half of the sessions. It was in keeping with the usual procedures of this course not to take attendance. This practice is also common to many other courses taught at this institution. No evidence is available on the rate of absence for other courses in which attendance is not normally taken. It may usually be as high as it was in this course. However, for two televised large-lecture courses in which attendance was taken (and thereby increasing the probability that students would attend), it was found that the percentage of students attending all sessions was 47% and 44% respectively, and the frequency of absence from half or more of the sessions was 7% and 8%. The over-all attendance rate for the experimental course was approximately 75%, while the attendance for the other courses was 84%.

How one regards the educational implications of the found rate of absences depends somewhat upon one's philosophical position. If one holds that students must be treated as responsible for their own decisions to select which classes to attend and when, and to accept the consequences if the decision is wrong, then there needs to be no concern about the rate of absence as such. One simply strives to make the course sufficiently rewarding for students to attend regularly. In this regard, it should be noted that students generally rated this course equal or better in terms of learning and interest than most others they had taken.

If, on the other hand, one holds that younger college students are not capable of making this decision rightly and that some rule must be imposed upon them for their own good, then this attendance record probably will not be thought to be sufficiently good. The

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regular taking of attendance would be a serious and difficult complication in allowing small groups to meet in residences and other convenient places outside of classrooms.

Any assessment of rate of absences should take into account the fact that regularity of attendance was not found to be related to any of the following factors: (1) course achievement (2) course rating (3) preference for television (4) place of viewing (5) sex (6) time of lectures.

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CHAPTER VII

Conclusions

The previous chapters and the appendices yield many findings and possible interpretations which warrant further examination. In addition, utilizing a conservative interpretation of the data, the following parsimonious set of conclusions can be stated.

1. When given the opportunity to view instructional television programs in their residences, a large proportion (about 50 per cent, generally, but more at certain hours) will do so.

2. The place of viewing seems to have no practical effect upon student achievement.

3. There appears to be no measurable difference in academic motivation between those who view in classrooms and those who elect to view in residences.

4. The choice seems to be almost wholly a matter of convenience - students view where it is most convenient for them to be when the class is televised. The proportion of students viewing in residences probably could be increased by an institutional effort to establish and maintain optimum viewing conditions in student residence halls and increasing the number of courses offered by television in residences.

5. The evidence indicates that failure to take roll probably results in somewhat reduced attendance. However, regularity of attendance was not found to be related to academic achievement or other pertinent factors.

6. Students had generally more positive attitudes toward this course as compared to other courses which they were taking.

7. Students' attitudes toward television instruction as compared with instruction in large classrooms were equally polarized about the neutral point. Attitudes became more favorable toward television with exposure to television instruction and on retrospect. Students were especially favorable toward television in the residences.

8. There was no relationship found between attitude toward television and course achievement or academic aptitude.

9. Discussion sections on lectures, led by undergraduates trained in discussion techniques appropriate to the content of the lectures, can be organized and staffed for both classroom and non-classroom locations and will be attended voluntarily by a large proportion of the students enrolled in the course.

10. A training program for discussion leaders conducted by senior staff skilled in the techniques of group discussion can recruit and train undergraduates as effective discussion leaders to staff special short discussion sections.

11. The training program was most effective when it recruited the student discussion leaders from those enrolled in the course rather than from advanced undergraduates who were majoring in social science.

12. The undergraduates who continued in the discussion leader program developed strong academic and professional interests, and for them the program appeared to be equivalent to a special program intended to encourage superior performance.

13. Apparently the program had little or no effect on those who were not leaders. Initially, a substantial majority of the non-leader group favored discontinuing this element of the course, but by the end of the experiment the opinion of the class was about equally divided.

14. In general, the quantifiable data yielded no distinction between leaders and non-leaders in terms of academic aptitude, academic achievement, academic motivation, or other factors presumably related to selection or outcomes. However, there is an indication that leaders are more likely to plan to attend graduate school than are non-leaders.

15. The opinion of the leaders themselves as gathered by questionnaire, interview, and observation indicated that their participation and training contributed to their knowledge of and interest in the course, to their ability as student leaders and to their understanding of the role of the teacher. Nearly all of them agreed that it was a valuable experience which they would repeat.

16. In the time during which the program was in operation, there was opportunity to train only a few leaders to the point of leading regularly scheduled hour-long discussion sections. Findings suggested that undergraduates with proper supervision could lead regular discussion sections effectively although they did not exercise some responsibilities of discussion leaders such as giving grades and preparing semester examinations.

APPENDIX I

THE EFFECTS OF GROUP STRUCTURE AND STUDENT TRAITS ON CLASS DISCUSSION OF TELEVISION LECTURES[1]

Introduction

Statement of the Problem

The major problem investigated by this study was the influence that the *structural properties* of size, social cohesion, and task cohesion as contrasted with the influence that the *student traits* of SCAT scores, final examination grades, pre-test grades, and attitudes toward television had upon the rate of participation in student discussion groups as measured by the total number of participations and the spread of participation.

Other problems investigated by this study concerned the three types of groups used: sorority, dormitory, and classroom. Firstly, the three types of groups were examined as to how they differed in the amount of differentiation they showed between sociogroups (task cohesion) and psychegroups (social cohesion). Secondly, the three types of groups were examined as to the relationship between the variables size and social cohesion, whether or not the relationship was the same or different depending on the type of group. Thirdly, the three types of groups were examined as to the relationship between the variables size and task cohesion, whether or not the relationship was the same or different depending on the type of group. Finally, the influence that the type of group, after controlling for size, had upon measures of task cohesion and social cohesion was examined.

One more problem was investigated. This problem was one of methodological interest. Both regression coefficients and correlation coefficients are measures of association. The results achieved by using coefficients of correlation and coefficients of regression in testing significance were compared. This problem was of special interest because most studies use correlation coefficients as the basis of the significance tests without reference to or comparison with the results obtained by using coefficients of regression based on the same data.

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[1] Appendix I is a summary of a study done by Judith Bayer White which served as a basis for her thesis for the Master of Arts in Sociology.

Hypotheses

H_1 - Social cohesion, task cohesion, and group size are independant structural variables.

H_2 - At least one of the three (sorority, dormitory, or classroom) groups is different from the others in respect to the amount of differentiation they show between sociogroups (task cohesion) and psychegroups (social cohesion).

H_3 - At least one of the three (sorority, dormitory, or classroom) groups is different from the others in respect to the relation between the variables size and social cohesion.

H_4 - At least one of the three (sorority, dormitory, or classroom) groups is different from the others in respect to the relation between the variables size and task cohesion.

H_5 - In testing H_2, H_3, and H_4 for significance, there will be a difference between the results determined by using regression coefficients or correlation coefficients as tested by the F-test statistic.

H_{6a} - Controlling for size, the mean scores in social cohesion in the three (sorority, dormitory, and classroom) groups will be different from each other.

H_{6b} - Controlling for size, the mean scores in task cohesion of the three (sorority, dormitory, and classroom) groups will be different from each other.

H_7 - SCAT scores, final examination grades, pre-test grades, and attitude toward television scores are independent student traits.

H_8 - Total number of participations and spread of participation are independent measures of the rate of participation in discussion groups.

H_9 - Structural variables are more important than the personal variables students bring with them in determining the rate of participation in discussion groups.

Procedure

The experiment was conducted in the context of the experimental situation described in the main body of the report. All of the groups used in this study were small in size, and it was anticipated that in the course of the semester they would all develop some primary group qualities. The sorority groups were primary groups from the onset, and the dormitory groups probably had some latent primary group qualities which could easily be developed under the proper stimulation. The classroom groups were, for the most part, only small groups of the type which may be described as _ad hoc_ laboratory groups.

Sociometric questionnaires were filled out by all the students in their hour-long regular discussion sections (which met twice a week) during the thirteenth week of the semester, after the short discussion groups had met nine times. The questionnaires were filled out at this time, because it was felt that the students should be well enough acquainted by then to know the other students by name and to know which ones they would choose for the two criteria given. The questionnaires could not have been filled out much later, because of the fact that attendance is often irregular near the end of the semester. The long discussion sections were chosen for administering the questionnaires rather than the short discussion groups to assure that the students would fill the questionnaires out honestly and objectively.

Two sociometric questions were asked, one was social-oriented, the other task-oriented.

1. Suppose that Sociology 104 was going to have a big picnic some Saturday at Lake of the Woods. If you were to ride in the same car with some other people both to and from this picnic, which people in your short discussion section would you choose for this pleasure? Name all those you would choose.

2. In preparation for the Final Examination in Sociology 104, you decide to review and discuss the material with some others in your short discussion section. Name the others in your short discussion section you would choose for this task.

The students were instructed to name as many people as they wished for each question. This was done in order to get a complete picture of the friendship choices. The resulting data from these questions were used to calculate an index of group cohesion which was operationally defined as:

$$C = \frac{3/2(R) + U}{I}$$

Where: C = group cohesion
R = number of reciprocated choices
U = number of unreciprocated choices
$I = N(N-1)$, the ideal case

The second part of the study concerns eight of the groups that were used in the first part, five classroom and three dormitory groups.

The measures of personal variables students bring with them were SCAT scores, final examination grades, pre-test grades, and attitude toward television scores. The group average for each of these variables was used in the calculations. The SCAT scores were secured from the Student Counseling Bureau of the University, and in some groups the scores were missing for some of the students. An average SCAT score was calculated from all of the SCAT scores that we had, and this average was used for the missing scores. The final examination consisted of slightly more than one hundred multiple choice questions. Each question had four alternatives or choices to select from. Attitude toward television was found by asking the question:

> If you had your choice of regularly attending a large classroom lecture or a television lecture for a social science course, which would you prefer?
> 1) TV strongly
> 2) TV somewhat
> 3) Either one
> 4) Large classroom somewhat
> 5) Large classroom strongly

Each of the eight groups was rated by two or more trained raters, who recorded the interaction that took place. These ratings were developed for a study by Professor Halbert E. Gulley, of the Department of Speech, which is reported in Appendix II. The raters were instructed to record who initiated each communication, to whom each communication was directed, whether the communication was a question or a non-question, and finally whether the communication was positive or negative in affect. A communication was defined as a remark from one person that remains in the same category and ends when another person speaks. If the remark changed categories once, it was regarded as two communications, even though the communication was one longer remark. For the purposes of this study, only the data on who initiated each communication was used.

Rate of participation in discussion groups was measured by the spread of participation and by the total number of communications initiated in the group. Six of the groups were rated three times, and two were only rated twice. The data for each group were averaged and the averages were used in calculating the rate of participation.

Results

In this section the results of the statistical analysis of the data will be reported. Each hypothesis will be stated and then evidence to support or to reject it will be presented.

Hypothesis 1 - Social cohesion, task cohesion, and size are independent structural variables.

Correlation coefficients were computed and tested for significance to determine if the variables were related.

TABLE 1

RELATIONSHIPS BETWEEN THE STRUCTURAL VARIABLES
N = 43

Variables	Correlation Coefficient	df	F
size and social cohesion	-.60	1,41	23.76**
size and task cohesion	-.41	1,41	8.67*
social cohesion and task cohesion	.44	1,41	10.38*

**significant at the .001 level
*significant at the .01 level

Hypothesis 1 must be rejected since the correlation coefficients are all significant at the .01 level or better as indicated in Table 1. Although Hypothesis 1 has been rejected, the three variables size, social cohesion and task cohesion will be used as measures of group structure. The correlation coefficients, though significent, are not very high, and a more complete picture will be obtained by using all three variables.

Hypothesis 2 - At least one of the three (sorority, dormitory, or classroom) groups is different from the others in respect to the amount of differentiation they show between sociogroups (task cohesion) and psychegroups (social cohesion).

An F-test was computed comparing the individual regression coefficients with the average regression coefficient.

		df	F
$SS_e b$	1.361		
$SS_e bi$	1.283	37	1.126*
Difference	0.078	2	

N = 43

*not significant at the .05 level

Hypothesis 2 must be rejected at the .05 level.

To check these results an F-test was computed comparing the individual correlation coefficients with the average correlation coefficient.

$$F_{2,N-6} = \frac{N-6[N(1-r^2) - n_1(1-r_1^2) - n_2(1-r_2^2) - n_3(1-r_3^2)]}{2[n_1(1-r_1^2) + n_2(1-r_2^2) + n_3(1-r_3^2)]}$$

$$F_{2,37} = \frac{278.616}{53.559} = 5.202^*$$

*significant at the .05 level.

Hypothesis 2 is accepted at the .05 level.

Since conflicting results were obtained, Hypothesis 2 can either be rejected or accepted depending on how strong a test is used. Even if Hypothesis 2 is not fully substantiated, we can say there is a trend in the direction predicted.

Hypothesis 3 - At least one of the three (sorority, dormitory, or classroom) groups is different from the others in respect to the relation between the variables size and social cohesion.

An F-test was computed comparing the individual regression coefficients with the average regression coefficient.

		df	F
$SS_e b$	0.938		
$SS_e bi$	0.900	37	0.788*
Difference	0.038	2	

N = 43

*not significant at the .05 level

Hypothesis 3 must be rejected at the .05 level.

To check these results, an F-test was computed comparing the individual correlation coefficients with the average correlation coefficient.

$$F_{2,N-6} = \frac{N-6[N(1-r^2) - n_1(1-r_1^2) - n_2(1-r_2^2) - n_3(1-r_3^2)]}{2[n_1(1-r_1^2) + n_2(1-r_2^2) + n_3(1-r_3^2)]}$$

$$F_{2,37} = \frac{-57.72}{57.565} = -1.003^*$$

*not significant at the .05 level

Hypothesis 3 must be rejected at the .05 level.

The relationship between the variables size and social cohesion was the same in all three (sorority, dormitory, and classroom) groups.

Hypothesis 4 - At least one of the three (sorority, dormitory, or classroom) groups is different from the others in respect to the relation between the variables size and task cohesion.

An F-test was computed comparing the individual regression coefficients with the average regression coefficient.

		df	F
$SS_e b$	1.412		
$SS_e bi$	1.372	37	0.540*
Difference	0.040	2	

N = 43

*not significant at the .05 level

Hypothesis 4 must be rejected at the .05 level.

To check these results an F-test was computed comparing the individual correlation coefficients with the average correlation coefficient.

$$F_{2,N-6} = \frac{N-6[N(1-r^2) - n_1(1-r_1^2) - n_2(1-r_2^2) - n_3(1-r_3^2)]}{2[n_1(1-r_1^2) + n_2(1-r_2^2) + n_3(1-r_3^2)]}$$

$$F_{2,37} = \frac{61.148}{67.671} = 0.903^*$$

*not significant at the .05 level

Hypothesis 4 must be rejected at the .05 level.

The relation between the variables size and task cohesion was the same in all three (sorority, dormitory, and classroom) groups.

Hypothesis 5 - In testing H_2, H_3, and H_4 for significance, there will be a difference between the results determined by using regression coefficients or correlation coefficients as tested by the F-test statistic.

The results for this hypothesis were derived in the process of testing H_2, H_3, and H_4. First, F-tests were computed comparing the individual regression coefficients with the average regression coefficient. Then, to check the results, F-tests were computed comparing the individual correlation coefficients with the average correlation coefficient. In one case out of three, the results were different depending on whether regression coefficients or correlation coefficients were used. In this case, the results were significant at the .05 level when the correlation coefficients were used and not significant at the .05 level when the regression coefficients were used. In the other two cases, the results were nearer to being significant at the .05 level when the regression coefficients were used.

Thus, in one case out of three, Hypothesis 5 was substantiated, and, in the other two cases, the trend was in the direction of more significant results when correlation coefficients were used than when regression coefficients were used.

Hypothesis 6_a - Controlling for size, the mean scores in social cohesion in the three (sorority, dormitory, and classroom) groups will be different from each other.

Hypothesis 6_b - Controlling for size, the mean scores in task cohesion of the three (sorority, dormitory, and classroom) groups will be different from each other.

An analysis of covariance was used to determine whether the means were different.

Analysis of Covariance

N = 43

	S	C_1	C_2	C_1'	C_2'
Classroom	7.43	.258	.213	.291	.253
Dormitory	7.86	.373	.292	.420	.349
Sorority	4.00	.860	.715	.781	.618

C_1 = social cohesion

C_2 = task cohesion

S = group size

C_1' = social cohesion after covarying on size

C_2' = task cohesion after covarying on size

Social Cohesion (C_1)

	SS	SS'	df	MS	F
Between	2.9860	1.2646	2	0.6323	26.23*
Within	1.4658	0.9391	39	0.0241	
Total	4.4518	2.2037	41		

$b_w = -.0399$

*significant at the .001 level

Task Cohesion (C_2)

	SS	SS'	df	MS	F
Between	2.1344	0.9066	2	0.4533	19.62*
Within	1.2512	0.8997	39	0.0231	
Total	3.3856	1.8063	41		

$b_w = -0.0326$

*significant at the .001 level

Hypothesis 6_a is accepted at the .001 level. The data show that the mean scores in social cohesion of the three (sorority, dormitory, and classroom) groups are different from each other.

Hypothesis 6_b is accepted at the .001 level. The data show that the mean scores in task cohesion of the three (sorority, dormitory, and classroom) groups are different from each other.

Hypothesis 7 - SCAT scores, final examination grades, pre-test grades, and attitude toward television scores are independent student traits.

Correlation coefficients were computed and tested for significance to determine if the variables were related.

Hypothesis 7 is accepted as indicated in Table 2, page 135. None of the student traits correlate at a level which could not be attributed to chance.

Hypothesis 8 - Total number of participations and spread of participation are independent measures of the rate of participation in discussion groups.

A product-moment correlation coefficient was calculated: $r = .13$. This r was tested to find if it was significantly different from what could be attributed to chance: $F = .103$, which is not significant at the .05 level.

Hypothesis 8 is accepted.

Hypothesis 9 - Structural variables are more important than the personal variables students bring with them in determining the rate of participation in discussion groups.

Multiple correlations were calculated between the structural variables and the total number of participations, between the personal variables and the total number of participations as one measure of rate of participation; and between the structural variables and the spread of participation, and between the personal variables and the spread of participation as the other measure of rate of participation.

Hypothesis 9 is rejected as indicated in Table 3, page 135. From the appearance of the data it appears that there is a trend in the opposite direction than was predicted, although none of the multiples Rs reach significance.

TABLE 2

RELATIONSHIPS BETWEEN THE STUDENT TRAITS
N = 8

Variables	Correlation Coefficient	df	F
pre-test average and final examination average	.26	1,6	0.435*
pre-test average and SCAT score average	.63	1,6	3.949*
pre-test average and attitude toward TV average	.38	1,6	1.013*
final examination average and SCAT score average	.57	1,6	2.888*
final examination average and attitude toward TV average	.19	1,6	0.207*
SCAT score average and attitude toward TV average	.43	1,6	1.361*

*not significant at the .05 level

TABLE 3

MULTIPLE CORRELATIONS
N = 8

Variables	Multiple R	df	F
Structural variables and total number participations	.4029	3,4	.258*
Personal variables and total number participations	$.9342^1$	4,3	5.14*
Structural variables and spread of participation	$.6897^1$	3,4	1.21*
Personal variables and spread of participation	$.8204^1$	4,3	2.06*

1 - corrected R for small sample size
*not significant at the .05 level

TABLE 4

CORRELATION TABLE N = 8

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Pre-Test Average	---	.26	.63	.38	-.05	.00	-.14	-.14	-.92
(2) Final Exam Average	.26	---	.57	.19	.26	-.08	-.33	-.32	.01
(3) S.C.A.T. Average	.63	.57	---	.43	-.02	-.07	-.24	-.42	-.39
(4) Attitude Toward TV	.38	.19	.43	---	.59	-.59	-.66	-.85	-.18
(5) Size	-.05	.26	-.02	.59	---	-.92	-.90	-.82	.26
(6) Social Cohesion	.00	-.08	-.07	-.59	-.92	---	.94	.79	-.22
(7) Task Cohesion	-.14	-.33	-.24	-.66	-.90	.94	---	.80	-.12
(8) Spread of Participation	-.14	-.32	-.42	-.85	-.82	.79	.80	---	-.13
(9) Total Participation	-.92	.01	-.39	-.18	.26	-.22	-.12	-.13	---
Mean	16.14	90.96	71.42	2.96	8.63	0.26	0.21	0.68	102.0
σ	1.39	5.70	5.01	0.37	1.41	0.10	0.08	0.11	15.1

Conclusions

An inverse relationship between size and cohesion was found. As size increases cohesion decreases. This was found to be true with both social cohesion and task cohesion. Cohesion was measured by a method something like averaging sociometric friendship choices, but a different result might have been obtained if a method which recognized differences between members' choices (weighting some members' choices higher than others) had been used. A direct relationship was found between social cohesion and task cohesion. Although it was not demonstrated that the measures of the structural properties were independent measures, they were used anyway since the correlations between the variables, although statistically significant, were small.

The four measures of personal characteristics proved to be independent variables, and the two measures of rate of participation in discussion groups proved to be independent variables.

The structural properties of the groups were no more important than the personal traits of the individuals in determining the rate of participation in discussion groups. There was some indication that the personal traits may be more important than the structural properties in determining the rate of participation in discussion groups, but because of the small number of cases tested the R's did not reach significance. The relationship with the highest correlation coefficient was an inverse relationship between pre-test average and total number of remarks, as shown in Table 4, page 136. It appeared that the less knowledge the students brought with them the more remarks were expressed during a discussion session, and yet only a limited number of people spoke. Thus, many remarks were made by two people, and the discrepancy between the high and low participators must be great.

The second highest relationship was between attitude toward television and the spread of participation. The more positive the attitude toward television the greater the spread in participation. The reason for this could be that since a favorable reaction was produced for part of the Sociology 104 program in these students they were not hostile toward the discussion program. They enjoyed the televised lectures and wished to participate in the discussion of the material presented in the lectures. An alternate explanation could be that what was gotten from the question on attitude toward television was a reaction to both the televised lectures and the short discussion sections. In the groups where many people participated, many people were emotionally involved and, therefore, preferred the whole Sociology 104 television method over the traditional classroom method.

The next three respective high relationships were between each of the structural variables (size, task cohesion, and social cohesion) and the spread of participation, as shown in Table 4, page 136. The smaller the group the greater the spread of participation, and the more cohesive the group the greater the spread of participation. It appears that in a small group each person has a greater opportunity to speak and may feel that he has a greater responsibility to contribute than he would have in a larger group. The atmosphere of a cohesive group may be more conducive to participation and, therefore, the shyer or less forceful individuals will feel freer to express themselves. Also it may be the case that each individual in a cohesive group feels that it is his responsibility to contribute something to the discussion.

Only three structural variables were used to determine the rate of participation in discussion groups, and two of the three were measures of cohesion of which there is some question as to whether or not the measures are true measures. If measures of cohesion that recognized differences among members with respect to functions, positions, or roles had been used, and if these differences were weighted appropriately, the results might have been different. Or it may be that the three measures used were not the most important measures of group structure in this case. Type of leadership, group norms, or other structural variables which were not measured in this study may be the important factors in determining the rate of participation in discussion groups.

Since only eight groups were used to determine whether the influence of the structural properties were more important than the influence of the personal traits upon measures of the rate of participation in discussion groups, and of these eight groups five were classroom groups and three were dormitory groups, it may be that we are dealing with small groups as opposed to primary groups. The results may have been different if real primary groups such as the sorority groups had been used for this part of the study. In primary groups the group norms would have been internalized, a definite subculture would have developed, and statuses and roles would have become more definite. Unfortunately, primary groups were not used, but the groups that were used were more like primary groups than the laboratory groups usually used for sociological studies.

There tends to be a difference between groups in distinguishing between psychegroups (social cohesion) and sociogroups (task cohesion). The better the group members were acquainted the better they could discriminate between the two. In this study the sorority groups were better able to discriminate between the two than were classroom groups and dormitory groups, and dormitory groups were better able to discriminate between the two than were classroom groups. Although the results of the significance tests were conflicting (regression coefficients showing no significant results and correlation coefficients showing significant results), there at least seemed to be a trend toward finer discrimination among the better acquainted groups. This finding indicates that those engaged in social research using the sociometric questionnaire technique should consider the type of group he is studying before using multiple criteria questionnaires. Unless the group members are well acquainted with each other, he will get the same amount of information by asking only one sociometric question as by asking several sociometric questions. This should result in a considerable savings in time and energy both by the researchers and their subjects.

An inverse relationship between size and social cohesion was found. This relationship was the same in all three (sorority, dormitory, and classroom) groups. Again, the membership of groups should be limited in number if task cohesion is to be encouraged.

When controlling for size there was a difference in the mean social cohesion scores and in the mean task cohesion scores between the three types of groups studied. The sorority groups scored highest on social cohesion and task cohesion, while the classroom groups scored lowest on both social cohesion and task cohesion. This finding suggests that those working with groups where cohesion is considered to be an important quality should take advantage of the natural continuing groups as opposed to the artificial groups set up for a purpose and then disbanded.

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APPENDIX II

RELATIONSHIPS AMONG PEER-LEADER BEHAVIOR, GROUP CHARACTERISTICS, AND LEARNING DURING GROUP DISCUSSION FOLLOWING SHORT TELEVISION LECTURES[1]

Introduction

Observations of peer-leader discussion groups following short TV lectures indicated that some groups developed much higher cohesiveness and rates of participation than others. A study was initiated to discover, if possible, what factors of leader and group behavior accounted for differences in participation, unity, and groupness.

One possibility considered was that differences might be explained as a function of the extent to which the peer-leader influenced the meetings to be "group-centered" rather than "teacher-centered." In a number of studies, "task-centered, demanding teachers were found to elicit from students hostility, apathy, and other signs of withdrawal, whereas accepting student-supportive teachers decreased anxiety and produced greater interaction and positive feeling among members both in class and outside the classroom."[2]

Hypotheses

In the present study, it was predicted that discussion groups would develop greater cohesiveness and higher rates of participation, and that members would learn more of the TV lecture content, under the following conditions:

A. Leadership

1. When the designated leader spends a high proportion of his time asking questions directed to the whole group (in contrast to making a high proportion of factual or opinion statements).
2. When the designated leader's contributions are more positive than negative in affect.

B. Participation

3. When a high proportion of the participants contribute more than one time to the discussion.

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[1] This study was designed and conducted by Professors Halbert E. Gulley and Francis R. Watson.

[2] Hare, A. P., Handbook of Small Group Research, Glencoe: The Free Press, 1962, p. 317. Relevant studies are abstracted in this source, pp. 331-6.

4. When participants tend to direct their contributions to the whole group rather than to the leader or to individuals.

5. When a high proportion of participant contributions are positive rather than negative in affect.

The statistical predictions were that a high positive correlation would be obtained between:

A. The number of questions asked by the leader, especially questions directed to the group as a whole or questions positive in affect or both; the extent to which leader contributions were positive in affect or directed to the whole group; and

   1. The total number of participant remarks
   2. The proportion of members contributing more than once
   3. The proportion of participant remarks which were positive in affect
   4. Learning, as measured by achievement tests
   5. Social cohesion of the groups late in the semester

B. The extent to which participant remarks were positive in affect or directed to the group as a whole; the proportion of members contributing more than once; and

   1. Total participant remarks
   2. Learning
   3. Social cohesion late in the semester

Procedure

Ten discussion groups were chosen for observation, half meeting in classrooms and half in residence halls or fraternities. The groups chosen had leaders who were "new" peer-leaders; i.e., they were involved in the course for the first time and had volunteered to lead these short discussions following the nine short television lectures during the semester. Groups observed were small; the average size was eight persons.

Observers were graduate students in the public address curriculum of the Department of Speech and Theatre; they were paid for their services and appeared highly motivated to participate. They attended three training sessions preparatory to making observations.

Observers recorded data in the small groups on three occasions spaced throughout the first semester of 1961-62, the first time for practice and the final two for the recording of the experimental data. They were trained to record group interaction using a modified version of Bales' interaction process analysis.[1]

Early and late in the semester members of groups were asked to indicate the extent of social cohesiveness and also of task cohesiveness. (See Appendix I). The only data reported here concern social cohesiveness late in the semester.

Data analysis consisted of obtaining inter-correlations of the factors being studied.

Results

The inter-observer reliability of these raters was apparently satisfactory under the conditions of recording specified. Correlations ranging from .88 to .99 were obtained by analysis of variance.

In general, the hypotheses of this study were not confirmed, although in most cases the correlations, while not statistically significant at the .05 level, were in the predicted direction. Correlations obtained are reported in Table 1, page 148.

The number of questions asked by the leader correlated .34 with total participant remarks, .21 with the proportion of participants' remarks positive in affect, and .33 with proportion of members contributing more than one time to the discussion. The proportion of the leaders' remarks which were questions addressed to the whole group, however, was inversely related to total participants' remarks (-.42), suggesting that, contrary to what was expected, a leader who asks many questions cuts down the number of remarks elicited, perhaps because each answer becomes more lengthy.

There was a low, positive correlation between total participants' remarks and the number of questions the leader addressed to the group (.34), the number of leader questions which were positive in affect (.48), and the number of total contributions by the leader which were positive in affect (.46). The highest correlations in this regard were a .61 between total participants' remarks and the proportion of the leader's remarks which were positive in affect, and a .66 between total participants' remarks and the proportion of the leader's remarks directed to the group as a whole. These correlations approach the .71 necessary for significance at the .05 per cent level of confidence. The picture obtained is not a consistent one, unfortunately, when participant behavior as it relates to the quantity of interaction is considered. There was a correlation of .17 between total participant remarks and the proportion of participants' remarks which were positive in affect and a correlation of -.21 between total participant remarks and the proportion of participants' remarks directed to the group as a whole.

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[1] Bales, R. F., Interaction Process Analysis, Cambridge: Addison-Wesley Press, 1950.

In five of eight cases, there was a low, positive correlation between the proportion of members who contributed more than one time to the discussion and the other measures expected to encourage interaction. These correlations were obtained between proportion of members talking more than once, and:

	r
Proportion of participants' remarks positive in affect	.53
Number of questions asked by the leader	.33
Number of questions asked by the leader which were positive in affect	.31
Total participants' remarks	.28
The number of contributions initiated by the leader which were positive in affect	.26
Number of leader questions directed to the group as a whole	.08
Proportion of leader's remarks which were positive in affect	.07
Proportion of participants' remarks directed to the group as a whole	-.02

An approving, encouraging attitude on the part of the leader may have been slightly related to the kind of attitudes developed by participants, since there was a correlation of .43 between the number of leader contributions positive in affect and the proportion of participants' remarks positive in affect. This relationship was not close enough to be statistically significant, however, and another measure casts further doubt upon it. The correlation between the proportion of positive leader remarks and positive participants' remarks was only .15.

The pattern emerging in relation to learning was similar and equally inconclusive. With one curious exception, there was a low, positive relationship between scores on the final examination and the measures expected to stimulate interaction and learning and to promote unity. These correlations were found between scores on that part of the final examination dealing with the content of the short television lectures, and:

	r
Proportion of leader remarks directed to group as a whole	.66
Number of leader questions directed to the group as a whole	.61
Proportion of leader remarks which were positive in affect	.57
Total participants' remarks	.39
Number of contributions of the leader which were positive in affect	.43
Proportion of participants' remarks directed to the group as a whole	.27
Number of leader questions which were positive in affect	.22
Proportion of participants' remarks which were positive in affect	.17
Number of questions asked by the leader	.10
Proportion of members contributing more than once	-.47

This final correlation of -.47 may suggest an inhibiting effect on learning when a high proportion of members enter into a lively discussion, but there is not enough data in this study to do more than speculate. Note in this list of correlations that the number of questions asked by the leader was not as highly related to learning as was the proportion of questions directed to the whole group.

While the correlations obtained for stimulation of interaction and for learning were in the direction predicted, although lower than expected, the results on social cohesiveness were contrary to expectations. In the case of only one relationship was there a positive correlation of .45. There was a correlation of .27, but six of the relationships were negative, including that between cohesiveness and learning. These correlations were obtained between social cohesiveness late in the semester, and:

	r
Proportion of members contributing more than once	.45
Proportion of participants' remarks which were positive in affect	.27
Proportion of leader remarks which were positive in affect	.15
Number of leader contributions which were positive in affect	.06
Number of questions asked by the leader	-.11
Number of leader questions which were positive in affect	-.13
Proportion of participants' remarks directed to the group as a whole	-.19
Number of leader questions directed to the group as a whole	-.21
Total participants' remarks	-.28
Final examination	-.29

Note that the highest relationship was with the proportion of members who entered the discussion more than once, and the lowest interactional relationship was with total participants' remarks. Perhaps where a minority dominated the discussion with much talk, unity suffered. Again, the relationships discovered are too uncertain and inconsistent to answer the fundamental questions involved here.

Discussion

Some positive relationship is suggested, then, between these indications of encouraging leadership behavior and the development of increased interaction and resultant learning. It must be added quickly, however, that the results here are clearly inconclusive, somewhat contradictory, and usually far short of statistical significance. In the case of social cohesiveness, moreover, the results are even more contradictory and unexpected.

The study raises a number of unanswered questions about the other unmeasured variables which may account for the variations in the results. A measure of the length of individual contributions might explain the difference in outcome when considering total participants' remarks and the number of members contributing more than one time to the discussion.

It is possible that a stronger relationship between interaction and learning would result if the amount of student learning could be measured at the conclusion of each discussion, rather than at the end of the semester. Other factors such as review and study habits enter into the final examination score and dilute any possible effects of the group discussions.

No explanation emerges from the study for the results on social cohesiveness. There is at least a suggestion from the data that the kind of encouraging leadership behavior measured here may have contributed to increased interaction, and positive participant attitudes. It is not clear why these same positive qualities did not contribute to greater group unity. There must be interfering factors which have not been taken into account.

Two incidental findings of interest came out of the study. Not unexpectedly, there was a correlation of .70 between group size and the proportion of the leader's remarks directed to the group as a whole. As would be expected, also, there was a correlation of -.92 between size and social cohesion late in the semester. Smaller groups develop unity more readily.

Table 1

Pearson Product Moment Coefficients of Correlation Obtained Among Rates of Participation, Leader and Participant Behavior, and Learning

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2	.18															
3	.63	.57														
4	.83	.98	.65													
5	.51	.70	.76	.75												
6	.77	.61	.53	.73	.53											
7	.06	.53	.20	.55	.04	.46										
8	.04	.40	.22	.48	.03	.53	.97									
9	.27	.32	.59	.45	.63	.50	.45	.55								
10	-.52	-.33	.07	-.31	-.58	-.14	.34	.37	-.11							
11	.43	.21	.46	.22	.25	.15	-.35	-.37	-.23	-.02						
12	-.31	-.32	.41	-.31	-.01	-.40	-.25	-.23	.10	.49	.41					
13	.26	.33	.08	.31	.11	.07	.04	-.02	-.26	-.08	.53	-.02				
14	.46	.34	.34	.48	.56	.61	.22	.35	.66	-.42	.17	-.21	.28			
15	.37	.10	.61	.22	.46	-.57	.07	.18	.66	.02	.17	.27	-.47	.39		
16	.06	-.11	-.21	-.13	-.43	.15	-.06	-.07	-.06	.35	.27	-.19	.45	-.28	-.29	

1. Number of leader remarks which were positive in affect.
2. Number of leader questions.
3. Number of leader questions directed to group as a whole.
4. Number of leader questions which were positive in affect.
5. Total leader contributions directed to group as a whole.
6. Proportion of leader remarks which were positive in affect.
7. Proportion of leader remarks which were questions.
8. Proportion of leader questions positive in affect.
9. Proportion of leader remarks directed to group as a whole.
10. Proportion of leader remarks to group which were questions.
11. Proportion of participants' remarks which were positive in affect.
12. Proportion of participants' remarks directed to group as a whole.
13. Proportion of members contributing more than once.
14. Total participants' remarks.
15. Final examination score.
16. Social cohesion late in semester.

APPENDIX III

A SOCIOMETRIC COMPARISON OF THE GROUP RESPONSE TO THE INSTRUCTIONAL SITUATION OF UNDERGRADUATE DISCUSSION LEADERS AND "HONORS" STUDENTS[1]

By the end of the third semester of operation of the new peer-group training program there was evidence that the student volunteers for the program had developed a strong sense of common identification with the enterprise. They also had evinced an interest in the subject matter of the course, as expressed in informal discussion among themselves which seemed to the project staff to be more overt than that found in students not involved in the project.

The question was then raised among the project staff as to whether this emergence of morale among and heightened academic interest by the peer-leaders was simply a consequence of the "Hawthorne" effect involved with participation in the program. It appeared that there was a possibility of answering this question by comparing criteria of the peer-leaders to those of another selected group of students in the course who were also involved in another program which had a definite "halo" or Hawthorne attribute. This second group was the "James Scholars" who were students designated by the University as members of a special honors program and for whom special curricular opportunities such as selected discussion sections had been established in many courses and departments. Membership in the James Scholars was on the basis of academic excellence in either high school or University records, and in Sociology 104-105 several discussion sections had been reserved for students in this category or with an equivalent academic standing. The possibility of a comparison between peer-leaders and James Scholars rested in the fact that one instructor taught a section of each and both were of approximately the same size and of similar composition in student attributes.

The basis of the comparison between these two class sections was the hypothesis that the special designation of each group of students gave them a status subject to the Hawthorne effect and that therefore their reactions as groups to the instructional situation of the course would be similar. Underlying this hypothesis was an assumption that any special recognition by University staff or administrators of a continuing and special student status relative to academic performance or to assisting in scheduled instruction would generate such a "halo" effect without regard to the content or duties of the status involved. If this proposition were demonstrated, its implication might be that once the uniqueness or novelty of an innovative status such as James Scholar or peer-leader had been reduced, that its influence or effect on such special status student groups would be dissipated.

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[1] The original research design, data collection and report of this study was prepared by Dr. Robert Herrick.

The comparison of the two class sections in respect to their group response to the instructional situation in Sociology 105 was made through sociometric scores on a questionnaire calling for choices of co-participants in an academic task and in a purely social event. This particular instrument was not administered to any other class sections because it was felt that the influence of the instructor, size of class (these two sections numbering eleven and twelve students were the smallest) and classroom conditions (these classes met in a seminar room) could not be controlled. The scores for both class sections for each type of choice were converted to an index which represented the percentage of persons chosen who were members of the class section. The comparison was made in terms of this index.

The administration of the instrument and the summarization of the responses were done as follows. The questionnaire consisting of two items was presented in the middle of the semester after it had been ascertained by the instructor that students in each section knew the names of all other students in the section. The items asked the respondent to choose persons he would like to be with on a social activity (a picnic of Sociology 105 students), and a task-oriented activity (studying for the final exam in Sociology 105). Items asked for five choices in order of preference with no stipulation that they should be from the class section. The first item yielded a sociogram for the group's cohesion in terms of social activities; the second item yielded a sociogram for cohesion which is task-oriented.

The students' choices were weighted and totaled for each group's sociometric score on each activity, with higher scores indicating more choices made within the group. The class sociometric scores were adjusted for the slight difference in size and then converted into an index showing percentage of weighted choices from within the class (i.e., the highest possible score would be 100) with the results shown in the following table.

Table 1

Comparison of Sociometric Scores of Peer-Leaders and James Scholars

Class Section	Score Activity Social	 Task
Peer-leaders	74	73
James Scholars	77	57

A comparison of the two groups with respect to the data of Table 1 leads to the following observations. In the peer-leader class section, the sociometric score is relatively high for both social and task-oriented activities. The James Scholars are equally high in social-oriented activity but indicate much less group cohesion in task activities. It appears significant that the peer-leaders display much more cohesion with respect to their academic task as students in the course although many of them were leading short discussion groups whose members were their friends living in the same sorority or small organized independent housing units. Apparently the sense of identification with other peer-leaders was stronger than it was either with their own residency groups or with members of the discussion groups which they led.

These findings are essentially fragmentary observations drawn from a much larger and unexplored framework involving the whole system of campus reference groups which are significant for students in meeting the tasks of their academic or learning role. The measure used, a kind of *ad hoc* sociometric index, likewise could be subject to several interpretations, and it is not clear if standard tests of significance of differences could be applied to these scores. Despite these reservations, however, it is possible to draw some tentative conclusions pertinent to the responses of these two categories of students to the instructional situation in the course. In the first place, there is a noticeable similarity in the scores shown in Table 1. Three of the measures of cohesion relative to group situations differ from each other by less than ten per cent. It would seem reasonable to assume that such a result would not occur too frequently by random chance. By the same reasoning, the markedly lower cohesion of the James Scholars in respect to academic task would have some likelihood of being of valid significance.

For these reasons, then, the following qualified conclusions may be suggested. First, the Hawthorne effect of designation as James Scholars is limited as an influence which creates group cohesion for meeting academic demands. The James Scholars in a course such as Sociology 105 are less likely than peer-leaders to cooperate with each other in preparation for satisfying the course requirements. This observation is in agreement with the findings noted previously by Dr. Alice Joenitz of the Dept. of Psychology on the academic careers of James Scholars. Students who remained in this status because of continuing academic excellence were both "loners" and "self-starters." They tended to work on their own, to set their own schedules of study, and independently of other students in their courses to meet the requirements of the courses. The assignments of these students to the honors program, then, did not markedly change their style of study and of academic performance. In this sense, then, their response to a designation of an honorific status was to continue the academic behavior which had been the basis of their selection. By contrast, the peer-leaders indicated a greater propensity to participate with the other students in the same status in order to meet the academic requirements of the course. This result might be expected since the whole peer-leader program emphasized learning through discussion and through participation in a group situation. Other peer-leaders, thus, apparently came to constitute a real reference group for the purposes of academic achievement in this instructional situation. For both groups, however, their special student statuses provided a reference for purely social activities.

The conclusion is, therefore, reached that it is not a halo effect of these special statuses which is the primary influence on the activity of students involved in the statuses. The rights, duties and expectations regarding the status do apparently register some effect on those involved in them. Any conclusions regarding the extent of this effect is limited in this case because of the differences in the manner of recruitment to the statuses. The peer-leaders were initially self-selected, while the James Scholars were chosen on the basis of previous academic performance. Also, members of the James Scholars class sections practically never volunteered to be peer-leaders. In general, they gave the impression that they regarded the learning process a matter for the individual to be carried on most effectively through reading text assignments. The peer-leaders, by contrast, expressed enthusiasm for the learning possibilities inherent in effective discussion and were strongly in favor of continuing the program. It would appear that the persons recruited to the two statuses were different in some personality traits which could have partially accounted for their differing group reactions to the possibilities of academic achievement by cooperating with other students in the same status. The various instruments administered in the course of the project did not, however, isolate such personality traits nor indicate that they were significant in response to special student statuses such as peer-leader and James Scholar.

APPENDIX IV

THE EFFECTIVENESS OF TRAINED UNDERGRADUATES AS LEADERS OF REGULARLY SCHEDULED DISCUSSION SECTIONS[1]

The original design of the project called for the creation of a pyramid-type training plan for developing the instructional skills of participating undergraduates. Each person at a higher level in the student training program was to be directly responsible for several persons at the next lower level. Four levels were envisaged ranging from a member of the senior faculty to several graduate teaching assistants to a number of advanced undergraduate sociology majors to the volunteer peer-leaders in the course. As noted previously this plan was introduced during the first semester of the project but was subsequently abandoned. The weakest link in the plan was the advanced undergraduates since none of these students had had any training in the techniques of discussion leading nor were they acquainted with the content of the course. Therefore, in their training they had no advantage over the student volunteers from the course. They also seemed to suffer from the tension of their status both in relations with the graduate discussion leaders, who were not willing to accept them as advanced students, and to the peer-leaders, many of whom were developing equivalent skills as discussion leaders and equal knowledge of the course content. The advanced undergraduate status, therefore, was dropped from the program after the first two semesters. Nevertheless, it was felt by the project staff that if peer-leaders could be retained in the project over several semesters, they would develop the necessary capacities to fill the level of the advanced undergraduate leaders and work directly with graduate assistants in the instruction of scheduled discussion sections.

The opportunity to test this premise came in the sixth semester of the project. By that time, two undergraduates had been members of the peer-leading program for four semesters and had worked as "student demonstrators" with the senior faculty person responsible for the training program. These two students were teamed with a graduate teaching assistant who was well acquainted with the procedures of the peer-leader program. He was given responsibility for two regular student discussion sections and two experimental sections. Ordinarily, he would have been assigned three regular discussion sections each of which would have met twice a week to discuss the reading assignments, lectures, examinations, term projects and other materials and teaching assignments employed in the course. He also would have been expected to have conferences with students, and he would determine the final grade for students in his sections. The average size of the regular discussion sections had been twenty students.

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[1] The original report of this phase of the project was made by Louis Rowitz and Dale Mueller who participated as a graduate teaching assistant and trained undergraduate discussion leaders.

A new division of responsibilities for leading the discussions in the experimental sections was worked out between the experimental team. This arrangement was intended to test the utility of the pyramid principle in the conduct of the discussion sections. Each undergraduate discussion leader was scheduled to meet once a week in one of the experimental sections which were limited in size to fifteen students. The graduate assistant met each of the sections at its other weekly meeting. He emphasized discussion of the reading materials, examinations and term projects. The undergraduate leaders concentrated on discussion of the lectures. They continued to participate in the weekly orientation sessions of the peer-training program for suggestions on analysis and discussion of the short lectures. They also viewed the longer lectures at their regular showings and prepared a guide for their own use in the discussion of these lectures. Each week the three members of the experimental team met briefly to review and to co-ordinate the presentations to be made in class. Short quizzes were administered by all three instructors over their own special subject matter, but the responsibility of the final grade in the course rested with the graduate assistant. This fact was mentioned in the first meetings of the sections, but it apparently did not become fully evident to a number of students until the time of the first hour examination. All instructors indicated that they would be available for conferences with students. There was one difference between the classroom situations of the two experimental sections. One met in a regular classroom with fixed seats, the other in a seminar room where the class sat around a table.

The three instructors throughout the semester made informal observations on several aspects of the experimental employment of this pyramid-type instructional arrangement. These points included the quality of the discussion stimulated by the undergraduate leaders as compared to that developed by the graduate leader for the same section; comparison of student performance on sections of the objective-type examinations devoted to questions on the lectures and those devoted to questions on the reading materials; student reaction to the employment of two discussion leaders rather than one; and student reaction to the use of undergraduates as discussion leaders. Early in the semester it also appeared that it would be pertinent to consider the influence of the differences in the classroom seating arrangements--one being around a table, the other being at fixed seats.

The instructors kept a record of the performance of students in each section, meetings were held to compare notes on classroom performances, examination scores of the two sections were compared, and a final review of the accumulated record was made from which a report was prepared. It should be noted that students were assigned to the experimental sections during the course of semester registration by the same procedures as for the regular sections. Students were not told during registration that these were experimental sections. Differences in student characteristics between the two sections, therefore, could be expected to be of the same, and presumably random in origin, type which accounted for differences between student characteristics of regular sections. The differences in average scores on the final examination for the two classes were such, given the small number of students in each class, to suggest that it was not possible to demonstrate statistically significant differences in academic capacity for this course between the two groups. This finding was the basis for assuming that in terms of academic capacity the two groups were reasonably alike, although as will be shown they did differ considerably in other kinds of performance.

The final report of the instructors on the results of the experiment contained the following findings. In one section both the graduate and undergraduate leader found it difficult to encourage discussion. There was, compared to the other section, considerable apathy in class, the number of attendance cuts were greater, and the preparation on the reading assignment was more dilatory. The one difference in the experimental conditions which seemed to bear any connection with this performance pattern was that this class met in the fixed desk classroom. In this connection the graduate assistant felt that the general behavior of this experimental section was more like that of his regular sections which also met in traditional classrooms. This finding suggests that, perhaps, the classroom seating arrangement had a greater influence on classroom performance of students than did the experimental conditions.

No statistically significant difference in examination scores on questions based on lecture materials and those based on reading materials, when the averages of the two experimental classes were compared to those of other students in the course, were revealed. It had been hypothesized that the extra emphasis on discussion of lectures might improve the scores on questions based on lecture materials. The failure to demonstrate this hypothesis, however, may well rest in the low statistical reliability of examination questions based on lectures. These questions were devised so that they did not contain any information which might have been conveyed through the reading materials. This restriction produced questions which were relatively simple in form and which called for discrete items of information transmitted in the lectures. It may well be, then, that class discussion of the lecture content could not add to student understanding or information needed to answer the questions correctly.

The use of two instructors for the discussion sections apparently was not in itself regarded unfavorably by the students in the two sections although they were aware that it was an experimental condition and that other sections were taught by only one instructor. Some students indicated that in other of their courses there was a different instructor for quiz sections and for laboratory sessions.

Students expressed surprise and occasionally annoyance prior to the first examination when the undergraduate instructors indicated that they did not assign the grades and, therefore, could not be responsible for the grades received nor for discussing the answers to the examination questions. By the end of the semester students seemed less concerned with the employment of undergraduates as discussion leaders than with the fact that as instructors they could not evaluate their performance. The undergraduate instructors developed the impression that the students felt that they could not require work of them.

The conclusions which were drawn from these findings are as follows: Undergraduate instructors who had been trained in the peer-leading could develop the competence necessary to conduct a scheduled hour-discussion section with an effectiveness comparable to that of a graduate teaching assistant. This competence was displayed mainly in the area of the materials presented by the lecture, but the student performance encouraged in class was consistent with the general conduct and goals of the course. In this respect these undergraduates were superior to sociology majors who served as discussion leaders but who did not have the experience of the peer-leading program. This finding would seem to confirm the effectiveness of the peer-training program. The major difficulty demonstrated by the experiment was that while the undergraduate instructors were given discussion-leading responsibility they were not given responsibility for evaluating student performance and for giving grades. Students, therefore, were not inclined to regard undergraduate-led discussion as an important instructional experience, although they might participate actively in it.

It also should be noted that the experiment created certain pedagogical difficulties for the regular instructor. He felt compelled to avoid discussion of lectures even at times when students came to class stimulated by the lecture they had just seen. Also, he felt limited in his opportunities to synthesize or to correlate reading and lecture materials because of a sense that his one discussion a week should concentrate on subject matter not included in the lectures. The division of emphases between the two discussion sections also inhibited flexibility in scheduling topics for the discussion section. For example, when it came time to prepare the term report, the burden of instruction on this topic was left with the graduate assistant and the students who might have had the benefit of a second discussion on the report during the week were confronted with a discussion on the lectures for that week led by the undergraduate instructor.

On the basis of these findings and conclusions, then, some estimate can be made of the potential utility of a pyramid system of instruction within the framework of a general education course utilizing televised lectures. This estimate can also contain a measure of the economy of an instructional operation modeled on this arrangement. In this connection it should be noted that the undergraduate instructors would, from all impressions, have been able to handle class sections of twenty students without difficulty. The advantages of a pyramid system are achieved through the agency of the discussion or quiz section instructors. The results of this project show that there are definite academic advantages for the undergraduates who participate in the peer-leader program. Gains for the students who attend peer-leader discussions appear to be indeterminate although there is no concrete evidence that the periods devoted to these discussions have any negative influence on student learning.

Thus, a central question concerning a pyramid system, beyond the obvious gain of the undergraduate members of the pyramid, is does it permit the employment of scarce skills in the instructional hierarchy in such a way to maximize their influence on students? An answer to this question in terms of the conclusions of this study would be as follows. The graduate teaching assistants in this course could probably be responsible for twice as many students in discussion sections if each of them was assisted by two undergraduate discussion leaders having peer-leader background and instructional roles like those in the experiment. In order, however, that undergraduates with these capacities be available it is necessary that the peer-training program be operating as a breeding-ground to produce trained undergraduate discussion leaders. The direction of such a program requires a permanent faculty member who spends at least half of his time training the peer-leaders. The fiscal economics of balancing this portion of a faculty salary against the costs of employment of undergraduate and graduate discussion leaders will depend on the relative salary scales of senior staff and teaching assistants. More relevant, perhaps, is the likelihood that the available number of qualified graduate teaching assistants will not increase in the same ratio as undergraduate student enrollment. For example, it is not difficult to envisage doubling enrollments in courses such as this within the next decade if undergraduate university enrollments continue increasing at the present rate. At the same time, it is difficult to anticipate doubling the number of qualified graduate teaching assistants available to departments. Under such circumstances, a pyramid plan of the type utilized in the experiment would seem to be a device for maintaining the present quality of instruction. It is considerations such as these which will determine the relative efficiency of instructional procedures such as those which have been explored in the present experiment.